Attitudes, Trust, and Wildlife Co-management in Igluligaarjuk, Qamani'tuaq, and Tikirarjuaq, Nunavut, Canada

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ABSRACT

Research has shown that trust is essential to the functioning of co-management. This is especially true in the Territory of Nunavut where wildlife is an integral part of the lifestyle and culture of *Nunavummiut* (the people inhabiting Nunavut). In Nunavut, wildlife is managed by a co-management board situated in between federal, territorial, regional, and community governments and organizations. This research explores Inuit attitudes and trust in managing wildlife as part of a co-management system in the Kivalliq Region of Nunavut, Canada. Interviews were conducted in the communities of Igluligaarjuk (Chesterfield Inlet), Tikirarjauq (Whale Cove), and Qamani'tuaq (Baker Lake). Even now with the 1993 settlement of the Nunavut Land Claims Agreement (NLCA) and the implementation of a public government in 1999, there is documented evidence that beneficiaries of the NLCA are dissatisfied with wildlife management decisions and do not trust the governing process of co-management. In this study, participants specifically indicated dissatisfaction with regulations and outcomes of current polar bear co-management. It has been predicted that conflicts specific to polar bear management could lead to regulations being ignored or even defied and endanger the entire system of wildlife co-management. Results from this research indicate that dissatisfaction over decisions involving polar bears is dominantly compartmentalized towards the outcomes of polar bear management and does not necessarily apply to the broader system of wildlife co-management. Therefore, in the Kivalliq Region, predicted impacts of dissatisfaction over polar bear co-management may apply directly to the polar bear co-management system but likely not the wildlife co-management system generally. This study provides a forum where Inuit trust in the wildlife co-management system is documented and I hope it will contribute to an increased understanding of Inuit goals in wildlife management and to the discourses on co-management in Nunavut.

Key Words: Wildlife Co-management, Nunavut, Kivalliq Region, Attitudes, Trust, Polar Bears, Hunters and Trappers Organisations, Nunavut Wildlife Management Board, Interview Methodology

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exposure to such a multinational collaboration allowed for an increased perspective and for the important trends in the Canadian data to really shine.

I believe I have lain out a truly comprehensive list of people and institutions that deserve acknowledgement, however, I have likely missed some people and to those who I have missed, I also thank you and apologize for the omission.

DEDICATON

To the people of Igluligaarjuk, Qamani’tuaq, and Tikirarjuaq.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ABBREVIATIONS

CITES - Convention on the International Trade in Endangered Species

DIO – Designated Inuit Organization

DOE – Department of Environment, Nunavut

ESA - United States Endangered Species Act

FB – Foxe Basin polar bear subpopulation

GN – Government of Nunavut

HTO – Hunters and Trappers Organization

IQ – Inuit Qaujimajatuqanjit

ITK – Inuit Tapiriit Kanatami

KIA – Kivalliq Inuit Association

KWB – Kivalliq Wildlife Board

MLA – Member of the Legislative Assembly

MOU – Memorandum of Understanding

NAMWC – North American Model of Wildlife Conservation

NGO – Non-Governmental Organization

NLCA – Nunavut Land Claims Agreement

NTI – Nunavut Tunngavik Incorporated

NWMB – Nunavut Wildlife Management Board

RCMP – Royal Canadian Mounted Police

RWO – Regional Wildlife Organization/Regional Wildlife Board

TAH – Total Allowable Harvest

TEK – Traditional Ecological Knowledge

TK– Traditional Knowledge

TUNDRA – The TUNDRA Project

WH – Western Hudson Bay polar bear subpopulation

WWF – World Wildlife Fund

PREFACE

This research documents Inuit attitudes in co-managing wildlife in the communities of Igluligaarjuk (Chesterfield Inlet), Qamani'tuaq (Baker Lake), and Tikirarjuaq (Whale Cove) in the Kivalliq Region of Nunavut. Particular emphasis is placed on an increased understanding of Inuit goals in wildlife management and what they may mean for implementation of wildlife co-management in Nunavut. The international attention and changing circumstances surrounding polar bear populations has resulted in an increased emphasis on polar bear management by research participants in the coastal communities. The emphasis on polar bear management expressed by participants is therefore reflected in this thesis.

Standpoint

I believe it is important for readers of this thesis that I first describe my outlook on the world also known as my "standpoint" (Clark, 2011, p. 117). The opinions voiced in this thesis are those of research participants that through a careful process of validation I have made every effort to communicate accurately. Although the opinions voiced are not mine, as the author of this thesis, the manner in which I have placed what participants are saying within the body of academic work likely reflects some aspects of my standpoint.

I am a man of European descent from Saskatchewan with a Bachelor of Science in Environmental Science and experience enforcing government legislated natural resource law designed to manage land and animals. Conversely, I grew up in a home where solidarity with, and constructive empathy for the marginalized was emphasized.

During my time in Nunavut, I learned to think about the concepts of management and even wildlife in a very different way that is not as focused on human control as it is on adaptation to changing conditions. This new found view of management has led to a strong belief that opinions and concerns of natural resource users and those who have direct contact with those natural resources play an important role in the sustainability of a system. Therefore, I believe that for resource management to promote sustainability it needs to reflect local opinions and concerns and, in most cases, local people should have greater power in governance.

I approached this research in a manner where more important to me than obtaining what might be considered successful results to the academic community was conducting this research respectfully. I hoped Inuit in the participating communities wanted me there, and I did not want this research to simply be a grab for information. I believe this approach produced the successful results used in this thesis that, based on the questions asked, were reflective of community priorities. I was welcomed by the communities of Igluligaarjuk, Tikirarjuaq, and Qamani'tuaq, however, I do not live in Nunavut and am still an outsider looking in at the process of wildlife co-management in Nunavut. My goals for this thesis were therefore to provide a forum that documents Inuit opinions and contributes to an increased understanding of Inuit goals in wildlife management and successful implementation of wildlife co-management in Nunavut.

Thesis Layout

This thesis has been arranged in a manuscript-style format and includes three chapters. The first chapter provides a description of governance and co-management in Nunavut. Chapter 1 continues with a review of the literature related to the role of attitudes and trust in co-management, conceptual differences of management among co-management participants in

Nunavut, and potential sources of conflict related to these conceptual differences. Chapter 2 is written as a manuscript in journal article format and is intended to be published in a refereed journal. In Chapter 2, followed by an abbreviated review of the literature from Chapter 1, objectives, and methodology, the results from this research are presented along with a discussion and conclusion. The final concluding chapter, Chapter 3, presents some recommendations relevant to implementation of co-management in Nunavut, provides reflections on the research process, and discusses the significance of contributions of this research.

INTRODUCTION

Management of polar bears is highly contested. Many people not only within the Circumpolar North, but also continental Europe and continental United States have been exposed to the issue and formed an opinion - sometimes well founded, often not - about polar bear management. Polar bear management may therefore present more challenges that result in controversy than instances of wildlife management involving other less high profile species. Much of the controversy is rooted in different understandings of polar bear population numbers and distribution as well as how decisions about management are made. Rapid social and ecological change occurring in Arctic areas renders decision-making especially difficult (Clark et al., 2008).

A major source of controversy is the prevailing scientific understanding that has influenced the popular societal view of polar bear populations. The popular understanding of polar bear population dynamics is quite different from that of local Inuit living in the communities of the Western Hudson Bay in Nunavut where this research has taken place. Biological studies have documented decline in reproductive output, condition (Stirling et al., 1999), and therefore survival (Regehr et al., 2007) of polar bears in the Western Hudson Bay polar bear subpopulation beginning in 1984. This population decline has been correlated to earlier ice breakup caused by a warming climate that limits polar bear access to seals (Stirling et al., 1999; Stirling & Parkinson, 2006; Amstrup et al., 2008) and is predicted to continue as sea ice continues to breakup earlier (Regehr et al., 2007; Obbard et al., 2010). Inuit living in the communities of the Western Hudson Bay who are experiencing increased encounters with polar bears, strange polar bear behaviour, property damage, and high numbers of polar bear defense

kills despite restraint by community members (Akavak, 2011) do not think that the subpopulation has declined (Nirlungayuk & Lee, 2009; Kotierk, 2012). In fact, many Inuit indicate that the bear population has increased.

Influences from outside Nunavut such as international legislation, conventions, agreements, and markets as well as national and international pressure from the public and activists that have been influenced solely by the prevailing scientific understanding of polar bear populations also impact polar bear management (Clark et al., 2008). Nirlungayuk and Lee (2009) indicate that many Inuit do not feel that *Inuit Qaujimajatuqangit* (the traditional knowledge of the Inuit) is being treated fairly or that their opinions are being acknowledged in decision-making about polar bears. In a time when the polar bear has become an international symbol of climate change (Clark et al., 2013), decision-making based on biological science that has excluded Inuit resource users has resulted in confusion and frustration felt by Inuit over decisions about polar bear management that are viewed as unfair and constricting (Nirlungayuk & Lee, 2009; Clark et al., 2009).

Whether it is polar bear management or any other public issue, knowledge about the attitudes of citizens is important to understanding the effectiveness of decision-making by institutions. In any democratic society, successful governance is dependent on the cooperation of those subject to it and therefore the legitimacy of decisions are based on trust and support from the citizenry (Putnam et al., 1994; Brondizio et al., 2009). More specifically to the context of wildlife management, support or positive attitudes are thought to be required for conservation success (Heberlein, 2012) and stronger support from resource users for policies that are not only determined by government has been documented (Jones et al., 2012). Therefore, knowledge about local attitudes towards wildlife management strategies is important to the implementation

of management that is more acceptable to the citizenry with minimal conflict (Glikman et al., 2012; Zajac et al., 2012).

Knowledge about the attitudes of local *Nunavummiut* (the people inhabiting Nunavut who, by a vast majority, are Inuit) towards wildlife management is especially important in Nunavut where wildlife is co-managed by an Institution of Public Government with representation from the Federal Government, Territorial Government, and Inuit Organizations. Local Inuit are not "powerless spectators" (Fabricius et al., 2007, p. 5) in this co-management arrangement but interact frequently with certain species, actively participate in management and therefore hold a lot of power in shaping and determining the success of management outcomes (Suluk & Blakney, 2008). Compliance with wildlife co-management decisions in Nunavut is therefore dependent on mutual trust and respect for the co-management regime and negative attitudes could severely limit implementation of those decisions (Clark et al., 2008). Knowledge of potential dissatisfaction or negative attitudes could help decision makers create wildlife management that is more acceptable to the citizenry.

Animals are an integral part of the lifestyle and culture of Inuit and the constitutionally protected Nunavut Land Claims Agreement stipulates co-management of resources. This means that Inuit who live in Nunavut and co-exist with the wildlife there likely have the greatest stake in management of that wildlife. Management of polar bears in the Western Hudson Bay is no exception to this. Furthermore, of the 19 subpopulations of polar bears found throughout the world, 12 of these subpopulations live in Nunavut (Dowsley, 2009a). Therefore the stake and influence Inuit in Nunavut hold in polar bear management is not only important to polar bears in Nunavut but to polar bear management worldwide.

Research Objectives

Even now with the settlement of the Nunavut Land Claims Agreement and the implementation of co-management institutions, Suluk and Blakney (2008), Tester and Irniq (2008), and Kunuk and Mauro (2010) describe how there is evidence that Inuit in Nunavut are dissatisfied with some wildlife management decisions and co-management decision-making processes. This research explores Inuit attitudes and trust in co-managing wildlife in the communities of Igluligaarjuk (Chesterfield Inlet), Qamani'tuaq (Baker Lake), and Tikirarjuaq (Whale Cove), Nunavut[1]. Specific questions I set out to answer included:

1. What do Inuit in the participating communities think about the management of various species of animals?

2. Who do Inuit in these communities trust regarding information about animals and what are levels of trust in governing institutions?

3. Why do these attitudes towards wildlife management and levels of trust arise?

Once I established an understanding of the attitudes expressed in co-managing wildlife, I conducted an examination of the potential broader implications of these findings. Specifically, the question I attempted to answer was:

4. What are the broader implications of attitudes expressed in co-managing wildlife and what do they mean for implementation of wildlife co-management in Nunavut?

[1] At the request of the communities, Inuktitut names have been used where possible and are used interchangeably with English names. For reference Igluligaarjuk is Chesterfield Inlet, Qamani'tuaq is Baker Lake, and Tikirarjuaq is Whale Cove. These communities are all located in the Kivalliq Region of Nunavut.

Canada's desire to engage indigenous peoples in governance structures and more specifically to co-manage wildlife with Aboriginal people are not practices that occur in many countries worldwide. I hope that through documentation of what study participants have said about wildlife co-management, this study will contribute to an increased understanding of Inuit goals in wildlife management. I also hope an exploration of community member's and hunters' attitudes in co-managing wildlife in the participating communities will be important to not only improving wildlife co-management in practice but will contribute to discourses about co-management in Nunavut.

Chapter 1 begins with a description of governance and the process of co-management in Nunavut. In Chapter 1, I continue with a review of the literature related to the role of attitudes and trust in co-management. This is followed by an examination of the conceptual differences of management amongst co-management participants in Nunavut. The chapter concludes with a discussion of potential sources of conflict related to these conceptual differences and potential consequences of conflict to co-management implementation.

Chapter 2 is written as a manuscript in journal article format and is intended to be published in a refereed journal. The article begins with an introduction to the research, research objectives, and methodology. This is followed by a presentation of results showing Inuit attitudes in co-managing wildlife and which institutions Inuit trust and think are important. The article concludes with a discussion of the demonstrated importance of polar bear management to participants, participant dissatisfaction with that management, and what it may mean for implementation of wildlife co-management in Nunavut.

The final concluding chapter, Chapter 3, presents some recommendations both specific to polar bear management and for the general implementation of wildlife co-management in Nunavut. These recommendations could help to avoid future conflicts or at least address them more quickly and efficiently when they arise. Chapter 3 concludes with reflections on the process of conducting research in Nunavut, and discusses the significance of contributions of this research.

CHAPTER 1: BACKGROUND AND CONTEXT

The purpose of this literature review is to provide the reader with knowledge of the context surrounding governance of wildlife in Nunavut. Knowledge of this context is important to gain an understanding of Inuit attitudes in co-managing wildlife and to understand why awareness of these attitudes is vital to successful wildlife co-management implementation. This literature review commences in section 1 with an introduction to Nunavut as both a comprehensive land claim and a Canadian Territory. Section 2 follows with a discussion of co-management, why it is important to wildlife management in Nunavut, and how wildlife co-management works in Nunavut. In section 3, the importance of knowledge about the attitudes of citizens to understanding the effectiveness of decision-making by institutions and the importance of trust to successful governance is described. Section 4 continues with an exploration of documented benefts from participation in co-management and then of issues with co-management implementation. Differences between an Inuit perspective of wildlife harvesting and the Western scientific perspective of wildlife management as well as challenges of combining these two perspectives into a wildlife co-management governance system are discussed. Finally, in section 5, I will introduce reasons why there may be dissatisfaction with wildlife co-management in Nunavut and potential consequences to the institution of wildlife co-management of that dissatisfaction.

1.1 Nunavut

The following discussion of Nunavut as both a comprehensive land claim and a Canadian Territory is important to an understanding of the process of governance in Nunavut.

1.1.1 Nunavut Land Claims Agreement

The Nunavut Land Claims Agreement (NLCA) established Nunavut as a comprehensive land claim and stipulates co-management of resources. Knowledge of the context surrounding the creation of the NLCA is important to gain an understanding of the various institutions involved in governance in Nunavut and why certain attitudes held by the Nunavut populace may arise.

The NLCA was formed based on Inuit assertion of Aboriginal title in Nunavut. The Canadian territory that is now Nunavut is the homeland of the Inuit of the central and eastern Arctic and means "Our Land" in Inuktitut (Nunavut Tunngavik Incorporated [NTI], 1993). The NLCA is the Agreement between the Inuit of the Nunavut Settlement Area and the Government of Canada that specifies ownership and use of lands in Nunavut (NLCA, 1993). A major reason that Inuit leaders pushed for the NLCA and the creation of Nunavut as identified by White (2009) was the need for governance in line with Inuit culture and values.

Since Nunavut is a comprehensive land claim, I believe a definition of this concept is important. A comprehensive land claim is defined by the Department of Aboriginal Affairs and Northern Development Canada (AANDC, 2010, para. 2) as follows:

> Comprehensive claims deal with the unfinished business of treaty-making in Canada. These claims arise in areas of Canada where Aboriginal land rights have not been dealt with by past treaties or through other legal means. In these areas, forward-looking modern treaties are negotiated between the Aboriginal group, Canada and the province or territory.

According to the Constitution Act, 1982, ""treaty" rights include rights that now exist by way of land claims agreements" (Department of Justice Canada, 1982, Section 35, 3). Therefore the NLCA is protected under the Canadian Constitution.

The NLCA has specific provisions for Inuit use and rights to land in Nunavut. The Agreement does not affect the status of Inuit as Aboriginal people of Canada, but Inuit living within the Nunavut Settlement Area gave up "all their aboriginal claims, rights, title and interests, if any, in and to lands and waters anywhere within Canada and adjacent offshore areas within the sovereignty or jurisdiction of Canada" in exchange for those set out in the NLCA (NLCA, 1993, Article 2, p. 11). Section 5.7.16 of the NLCA (1993), however, specifies that Inuit can travel and harvest on all lands within the Nunavut Settlement area including crown lands except for lands under surface lease or with specified regulations that limit access. According to the Nunavut Tunngavik Map of Inuit Owned Lands (NTI, 2000), Nunavut covers about 20% of Canada's land mass. The map specifies that Inuit own about 17.7% of the land in Nunavut and about 1.9% of the subsurface rights. Much of Inuit Owned Lands are rich in renewable and non-renewable resources to promote Inuit economic self-sufficiency (NLCA, 1993, Article 17).

The formation and approval of the NLCA followed a series of negotiations between the Government of Canada, the Government of the Northwest Territories which used to govern the area that is now Nunavut, and an Inuit organization, the Tunngavik Federation of Nunavut. The Tunngavik Federation of Nunavut, now known as Nunavut Tunngavik Incorporated (NTI), is the organization that represented and continues to represent Inuit in the signing of the Nunavut land Claims Agreement (NLCA, 1993). NTI which is referred to as an "Inuit government" by White (2009) still "coordinates and manages Inuit responsibilities set out in the NLCA and ensures that

the Federal and Territorial Governments fulfill their obligations" (Nunavut Tunngavik, n.d., para.1). Wenzel (2004) suggests that NTI acts as an advisor to the Government of Nunavut on Inuit related matters. Inuit approved the NLCA in a ratification vote from November 3-6, 1992 (NLCA, 1993). The Agreement was then signed by the officers of the Tunngavik Federation of Nunavut, the Prime Minister of Canada on May 25, 1993 (NTI, 1993), and the Government of the Northwest Territories.

1.1.2 Governance in Nunavut

> For a numerically small jurisdiction, governance in Nunavut is remarkably complex, encompassing not only the territorial, but also the federal government, an extraordinarily powerful Aboriginal government, a set of constitutionally protected co-management boards dealing with wildlife and environmental regulation, and a full array of local community governments, all operating within the framework of the extensive governance provisions of a comprehensive land-claim agreement. (White, 2009, p.59)

In addition to being a comprehensive land claim, Nunavut is also a Canadian Territory where although decisions are made by co-managed Institutions of Public Government, ultimate governing authority is held by the Territorial Government and in some cases, the Federal Government. This arrangement makes governance in Nunavut unique and complex. Provisions for the formation of the Territory of Nunavut with its own legislative assembly, public government, and co-management of resources were specified in the NLCA (NLCA, 1993, Article 4), although the Territory of Nunavut was created under the Nunavut Act as a federal territory (Wenzel, 2004). The Canadian Parliament passed the NLCA and Nunavut Act on July 9th, 1993, and Nunavut became a territory on April 1, 1999 (Canada History, 2013). July 9th is now celebrated as Nunavut Day across Nunavut.

Although governance in Nunavut is unique, it also has similarities to other Canadian government arrangements. Wenzel (2004) explains that the territory includes all Inuit owned lands as well as water and land under federal and territorial jurisdiction and is set up to function like that of the Northwest Territories and Yukon which was in contrast to expectations by many Inuit citizens of a completely Inuit government. The Government of Nunavut website (GN, n.d.), describes how the Government of Nunavut is a consensus style government where MLAs are elected as individual candidates from the 19 different constituencies. The elected MLAs select the ministers, premier, and speaker who are then appointed by the commissioner. It is further explained that although it is a consensus style government, a majority vote is sufficient and unanimous agreement is not needed to make decisions.

Wildlife management duties of the Government of Nunavut are fulfilled by the Nunavut Department of Environment (DOE) Wildlife Management Division. As is described on the Nunavut Department of Environment (DOE) website (DOE, n.d.), there are three main wildlife management programs run by the Wildlife Management Division including Wildlife Research, Wildlife Operations, and Wildlife Deterrence. These programs entail research based on *Inuit Qaujimajatuqangit* (see next paragraph) and scientific data to develop management plans, regulations, and conservation recommendations to be reviewed by the co-managed Nunavut Wildlife Management Board (NWMB). As well, conservation officers work with communities to monitor wildlife and ensure that wildlife regulations are followed.

> The DOE Wildlife Management division has a legislated mandate for the management of terrestrial wildlife species in Nunavut. In addition to the Nunavut Wildlife Act, the Wildlife Management division is responsible for fulfilling GN responsibilities under a wide range of federal legislation and both national and international agreements and conventions, including on-

> going responsibility for the co-management of Nunavut wildlife as obligated under the NLCA. (DOE, n.d., para.1)

The Federal Government is also still very influential in Nunavut and holds jurisdiction over crown land and non-renewable resources (White, 2009), as well as marine areas and resources (NLCA, 1993, Article 15).

Inuit Qaujimajatuqangit (IQ) is intended to play a strong role in informing decisions made by the Government of Nunavut. According to White (2009), the Government of Nunavut has made a real effort to adopt this policy as a "central principle" to guide policy and management and there has been an emphasis on *IQ* in decision making (Tester & Irniq, 2008). Tagalik (2010) describes *IQ* as the Inuit world view or traditional Indigenous knowledge of the Inuit. She indicates that the term translates directly to "that which Inuit have always known to be true" (p. 1). In describing the all-encompassing nature of *IQ*, Martin (2012, p. 3) quotes The First Annual Report of the Inuit Qaujimajatuqanjit Task Force from 2002 which describes *IQ* as "*the Inuit way of doing things: the past, present and future knowledge, experience and values of Inuit Society*". Tester & Irniq (2008) describe it as a "safe place" or "a space, a context within which respectful dialogue, discussion, questioning, and listening can take place" (p.58) and "seamless" where "everything is related to everything else in such a way that - counter to the logic of Western science - nothing can stand alone" (p.49). *IQ* maintains values and knowledge from the past such as respect for wildlife, hunt only what is needed, and cooperation (Wenzel, 2004) while constantly adapting and evolving (Martin, 2012; Dale & Armitage, 2011).

1.2 Co-management in Nunavut

Resources in Nunavut are co-managed in accordance with specifications in the Nunavut Land Claims Agreement (NLCA). A discussion of co-management is therefore necessary for an understanding of how decisions are made about widlife in Nunavut. In this section, I will define co-management and adaptive co-managment, explain why it is important to wildlife management in Nunavut, and explain how wildlife co-management works in Nunavut.

1.2.1 Co-management

There is a consensus on the core principle of co-management found throughout the literature that is the sharing of decision-making power in governance. Berkes (2009, p.1692) describes co-management as "a knowledge partnership" or "the sharing of power and responsibility between the government and local resource users" while Gelcich et al. (2006, p. 951) describe the process as "a spectrum of arrangements between governments and user groups described by different levels of devolution of power" (Gelcich et al., 2006, p. 951). The objective of these arrangements is to "resolve societal challenges" (Armitage et al., 2009, p. 95) which in this case are those of natural resource management and more specifically wildlife management of which the ultimate objective is cooperative "sustainable coexistence" with wildlife (Clark et al., 2005, p. 263). Co-management of wildlife is therefore a method of promoting "social ecological resilience by simultaneously protecting wildlife and its habitat and promoting capacity and motivation for sustainable harvest management by communities" (Moller et al., 2009, p. 211). I believe an important part of co-management is negotiation of decisions together and recognition of the value of different worldviews as opposed to integration of one knowledge system into another or prioritization of one knowledge system over another.

The phenomenon of co-management in Canada is still quite new but it has become an important model that guides resource management conducted in partnership with resource users and especially Aboriginal groups. Co-management emerged in Canada with the negotiation of the James Bay and Northern Quebec Agreements in 1976 (Rodon, 1998; Urquhart, 2012) which is also when negotiation of the NLCA began (Suluk & Blakney, 2008). During that time there was a movement towards greater self-government by Aboriginal groups (Berkes et al., 2001) and recognition of indigenous institutions and their modes of decision-making (Webber, 2014). Co-management is increasingly becoming accepted and emphasized as an effective and equitable method of natural resource management (Gelcich et al., 2006; Bardati & Bourgeois, 2008). In fact, participation of resource users in group decision making that accommodates diverse perspectives has been identified as a requirement for management to be effective (Armitage et al., 2009; Stenseke, 2009; de Vos & Tatenhove, 2011). In some resource management theory, it is suggested that people who depend on a resource are more willing to care for it and therefore have the greatest stake invested and should have more power in its management (Berkes, 2003). Such a theory expands on the principle of subsidiarity that promotes decentralization and in the context of political decisions that decisions should be made at the lowest level possible (Spicker, 1991).

1.2.2 Adaptive Co-management

The ability of governance systems to adapt to changing conditions is becoming more important; co-management is not an exception to this. Armitage et al. (2009) and Olsson et al. (2004), highlight the need for governance that is both flexible and collaborative to contribute to increased adaptive capacity and accommodate rapidly changing socio-ecological systems such as those found in Arctic areas. Adaptive co-management has been touted as the "emerging approach

for governance of social-ecological systems" where the "novelty of adaptive co-management comes from combining the iterative learning dimension of adaptive management and the linkage dimension of collaborative management in which rights and responsibilities are jointly shared" (Resilience Alliance, 2013, para. 1). Armitage et al. (2009, p. 96) explain that the combination of co-management and adaptive governance contribute to "a flexible system of resource management" involving "various organizations at different scales" that is well suited to complex, uncertain conditions that are prone to conflict.

Adaptive co-management practices are usually adopted by mature co-management regimes. Crises (Clark and Slocombe, 2011) or environmental events (Olsson et al., 2004) that transform social ecological systems are identified as potential catalysts for adaptive co-management. In addition, increased adaptive capacity has been identified as a key outcome of co-management by Dale & Armitage (2011) and Berkes (2009) suggests that through continual learning and problem solving, co-management regimes become adaptive co-management or adopt adaptive co-management practices over time. Berkes (2010, p. 489) identifies processes leading to adaptive co-management which include: "deliberation, visioning, building social capital, trust and institutions, capacity building through networks and partnerships, and action reflection loops for social learning".

1.2.3 Wildlife Co-management in Nunavut

Wildlife in Nunavut is now co-managed in accordance with Article 5 of the NLCA (1993). In this system, a co-managed Institution of Public Government entitled the Nunavut Wildlife Management Board (NWMB) is the main instrument of wildlife management although ultimate decision-making power rests with the Territorial or Federal Government. The policy

instrument that initially informed NWMB decision-making was the Nunavut Wildlife Harvest Study completed in 2004 that documented Inuit use of wildlife. Decisions are also made in consultation with the Designated Inuit Organizations (DIOs) that represent the residents of Nunavut. Once decisions are made, harvesting is overseen by community and regional organizations that conform to NWMB decisions.

I feel that section 5.1.2 in Part 1 of Article 5 of the NLCA (1993) outlining the principles of wildlife co-management in Nunavut is very important for an understanding of the context of wildlife co-management in Nunavut because it clearly defines goals for co-management of wildlife and the role of Inuit in that co-management.

> Principles
>
> 5.1.2 This Article recognizes and reflects the following principles:
>
> (a) Inuit are traditional and current users of wildlife;
>
> (b) the legal rights of Inuit to harvest wildlife flow from their traditional and current use;
>
> (c) the Inuit population is steadily increasing;
>
> (d) a long-term, healthy, renewable resource economy is both viable and desirable;
>
> (e) there is a need for an effective system of wildlife management that complements Inuit harvesting rights and priorities, and recognizes Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat;
>
> (f) there is a need for systems of wildlife management and land management that provide optimum protection to the renewable resource economy;
>
> (g) the wildlife management system and the exercise of Inuit harvesting rights are

governed by and subject to the principles of conservation;

(h) there is a need for an effective role for Inuit in all aspects of wildlife management, including research; and

(i) Government retains the ultimate responsibility for wildlife management.

The following is an overview of sections of Article 5, Wildlife, of the NLCA (1993) that I believe are important to understanding the structure and decision-making process of wildlife co-management in Nunavut as well as to developing the ability to think critically about that process.

In this system, a co-managed Institution of Public Government entitled the Nunavut Wildlife Management Board (NWMB) is the main instrument of wildlife management. Part 2 of Article 5, provides provisions for the establishment of the NWMB. Although the Territorial or Federal Government has ultimate responsibility for wildlife management decisions, including international agreements, the NLCA indicates that the NWMB is the main regulator of wildlife in the Nunavut Settlement Area. Wildlife management entails research, consultation, and decision making.

The NWMB is co-managed board meaning there is representation from the Government of Canada, the Government of Nunavut, and the Designated Inuit Organizations (DIOs). The NWMB as defined in the NLCA (1993) consists of nine members appointed as follows: three chosen by the Government of Canada and appointed by the Governor in Council otherwise known as the Commissioner acting by and with the advice and consent of the Executive Council otherwise known as the Privy Council of the Government of Canada; four members appointed by each of the four DIOs including each of the Regional Inuit Associations consisting of the

Qikiqtani, Kivalliq, and Kitikmeot Inuit Associations (NWMB, n.d.), and Nunavut Tunngavik Incorporated (NTI); one member appointed by the Commissioner of the Government of Nunavut. The Governor in Council appoints a Chairperson from nominations provided by the NWMB.

NWMB decisions must be approved by the Federal or Territorial Government according to a certain protocol that is described in Part 3 of Article 5. The NWMB makes decisions in consultation with the DIOs who represent the residents of Nunavut. Public hearings may also be held to aid in decision making processes. When the NWMB makes a decision, it is forwarded to the Minister of the Territorial Government or Federal Government depending on if the decision falls under territorial or federal jurisdiction. The Minister then either accepts or disallows the decision. Decisions can only be disallowed if the evidence available to the NWMB does not support the NWMB's decision. For decisions that are disallowed, the NWMB receives written reasons why the decision was disallowed, and then reconsiders and makes a final decision. The Minister may then accept, vary, or disallow the NWMB final decision. Although the role of the NWMB is technically only advisory, according to White (2009), in most situations their decisions are usually those that are carried out.

The Nunavut Wildlife Harvest Study, described in Part 4, was designed to be a policy instrument to help inform NWMB decision-making. Specifically, the purpose of the study which was carried out under direction of the NWMB was to document Inuit use of wildlife and gather biological data to aid the NWMB in managing wildlife and establishing Total Allowable Harvest (TAH) levels and Inuit basic needs levels. The study was completed in 2004 and entailed interviews with more than 6000 harvesters in Nunavut from 1996-2001 (Priest & Usher, 2004).

Wildlife is allocated to Inuit based on NWMB decisions and specifications described in Part 6. Subject to government approval, the NWMB has sole authority in establishing TAHs, Inuit basic needs levels of wildlife, and regulating harvesting. The Inuit basic needs level is based on the Nunavut Wildlife Harvest Study, and may be reviewed and adjusted. Inuit have the right to the entire TAH and the basic needs level may be adjusted up to the TAH. If a TAH is not established for a species, an Inuk can harvest that species up to their full level of need. The surplus left over if there is a difference between the basic needs level and the TAH is allocated to other residents, sports and commercial operations, and economic ventures by the Hunters and Trappers Organizations (HTOs) or Regional Wildlife Organizations (RWO). Other non-quota regulations may be imposed on harvesting by the NWMB. A person may kill wildlife to preserve human life or prevent starvation and as stated in section 5.7.30, "an Inuk shall have the right to dispose freely to any person any wildlife lawfully harvested", although a license may be required to sell some species commercially.

Harvesting is overseen by Hunters and Trappers Organizations (HTOs) at the community level and Regional Wildlife Organizations (RWOs) at the regional level. Part 7 describes these organizations and their power in implementing NWMB decisions. All Inuit residing in a community are able to be members of the HTO. Members of each HTO elect to a board members to represent community harvesting interests. The HTO board manages harvesting of its members. RWO boards are formed from representatives of the HTO boards in each region and manage harvesting at a regional level. Each organization develops its own bylaws, and the HTOs are expected to conform to RWO decisions while RWOs conform to NWMB decisions. Figure 1.1 depicts the organizations involved in wildlife decision making in Nunavut.

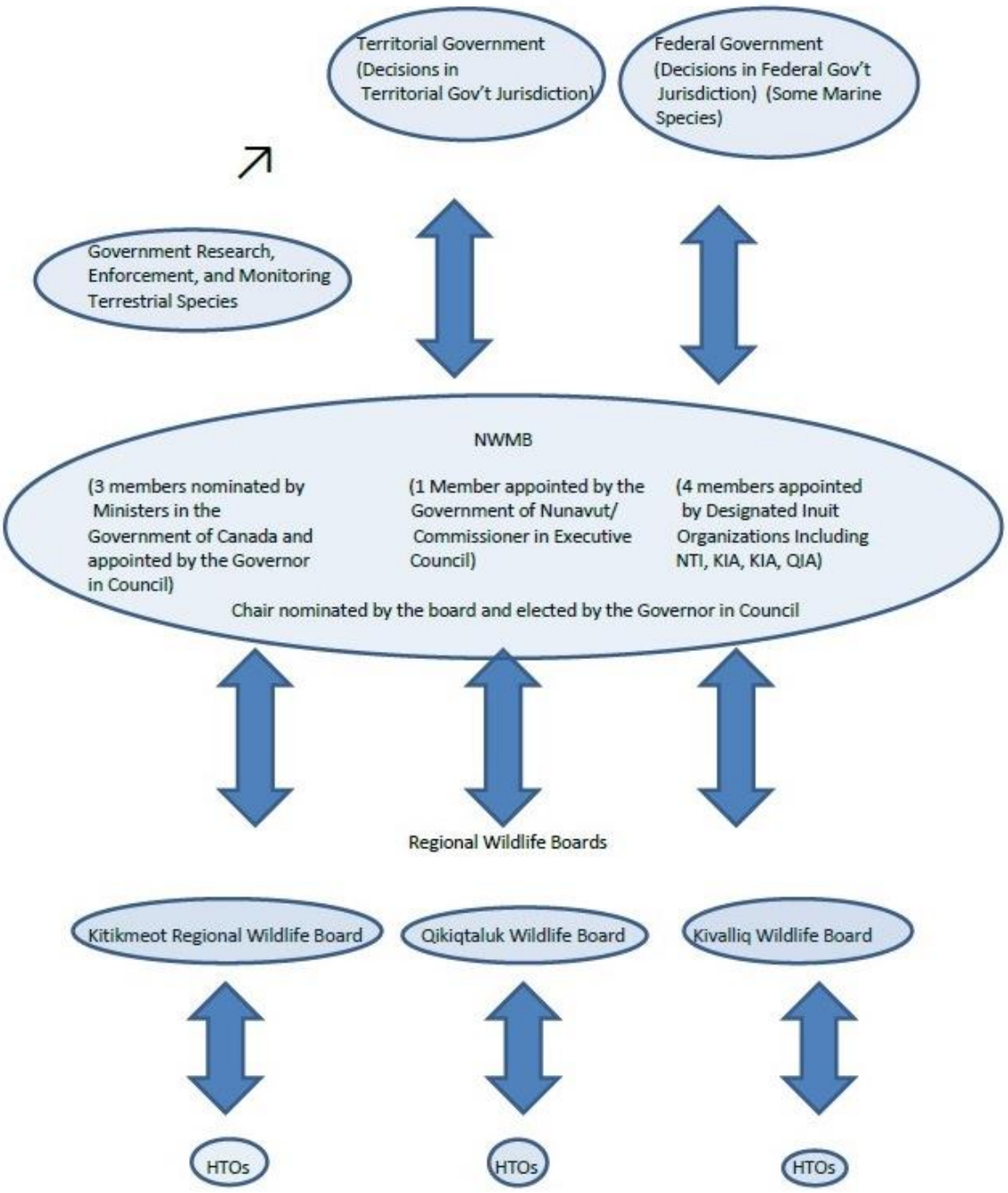

Figure 1.1. Organizational Chart of Wildlife Co-Management in Nunavut. My interpretation based on Article 5 (Wildlife) of the NLCA.

To illustrate the process of wildlife co-management in Nunavut for a species where TAHs are in effect, the following part of this section gives an overview of polar bear co-management of the polar bear subpopulations from which Igluligaarjuk and Tikirarjuaq receive their allotted TAHs.

Currently, polar bears are co-managed in accordance with the NLCA and according to a Memorandum of Understanding (MOU) detailing management for each subpopulation between the community HTOs harvesting from the subpopulation, the RWO(s), and the Nunavut Department of Environment (DOE). According to Dowsley and Wenzel (2008), an MOU is signed at approximately 15 year intervals when polar bear subpopulations are surveyed by Government of Nunavut biologists. Surveys based on scientific information take place to determine population estimates for polar bear subpopulations and assist in establishing management and the TAH. Dowsley and Wenzel (2008), explain that the MOU is not legally binding and therefore over that 15 year period until the next survey occurs, as decided by the NWMB and subject to approval by the Government of Nunavut, Minister of Environment, the TAH which is legally binding can be increased or decreased based on science, *IQ*, or a combination of both. Peter Kydd, director of Wildlife Management for the NWMB has explained to me (personal communication, August 13, 2014) that a decision may require approval of the federal Minister if it falls within federal jurisdiction which is typically only for polar bear subpopulations below 60° North.

The communities of Igluligaarjuk and Tikirarjuaq are allocated polar bear quotas by the Kivalliq Wildlife Board from the TAH decided by the NWMB for specific polar bear subpopulations including the Western Hudson Bay subpopulation (WH) and the Foxe Basin subpopulation (FB). The boundary of the WH subpopulation extends from areas in Manitoba and

Ontario to just south of Chesterfield Inlet (Stapleton et al., 2014) and includes the Baker Lake, Chesterfield Inlet, and Whale Cove HTOs. The FB subpopulation is located to the north of the WH subpopulation and also includes the Chesterfield Inlet HTO (GN, 2012). A new polar bear management plan is being developed, however, the MOU from 2005 for the WH polar bear subpopulation (Stapleton et al., 2014) as well as the MOU for the FB subpopulation (GN, 2012) are still being followed.

Decision-making leading to a TAH follows a specific protocol and the TAH for the WH subpopulation has been changed multiple times over the course of the current MOU. According to the 2005 MOU for the WH subpopulation (GN, 2005), for the first 7 years, the TAH is set at the "conservative harvest rate" based on the most recent harvest inventory and under which the population is expected to grow. During the second 7 years or when there is no reliable population inventory, the "guided harvest rate" based on *IQ* and perceptions of trends is used. The MOU also specifies that moratoriums on harvest can be implemented by Nunavut DOE if population inventories suggest the population has fallen below 90% of the target number. When requests for a new TAH decision by the NWMB are made, information presented by the Territorial and Federal Governments as well as the DIOs consisting of scientific population estimates, observation of trends, information based on *IQ*, as well as a public hearing process is used to form a TAH decision. The NWMB submits their decision regarding the TAH to the Nunavut Minister of the Environment (federal Minister in specific cases) who either accepts or rejects the NWMB decision. If the decision is rejected, the NWMB has an opportunity to make a final decision which is again reviewed by the Minister who makes the final decision and allocates a TAH (NLCA, Article 5). Dowsley (2009a) explains that the RWOs and the community HTOs

negotiate communities' quotas from the TAH. The HTOs then decide community regulations and distribute the tags to hunters.

There are provisions within the MOU that allow some flexibility to communities' use of allocated quotas. A flexible quota system where tags can be given or loaned to other communities if they are not completely used in one community, and another community experiences unexpected kills unaccounted for by tags does, to some extent, allow the traditional Inuit-polar bear system to operate (Schmidt & Dowsley, 2010). The 2005 MOU for the WH subpopulation (GN, 2005) indicates that if the number of polar bears killed by humans, including bears killed for safety reasons, exceeds the TAH for a community, a tag will be deducted from the next years TAH. If one community experiences more kills in defense and exceeds their TAH, unused tags from other communities within the boundaries of the polar bear subpopulation can be allocated to the community that exceeded their TAH. Likewise, tags for female and male bears can be exchanged if a community overharvests one of the sexes which are currently harvested at a 2:1 male to female ratio. Unused tags can also be used as credits to be allocated for future accidental kills at the discretion of the RWO.

There is a high level of involvement of local Aboriginal people in wildlife management decision-making in Nunavut. Gilchrist and Mallory (2007) suggest that through institutions of public government and policies within the NLCA, the involvement and influence of local communities is stronger than anywhere in North America. For example, although there are instances of informal co-management of polar bears in Alaska "based on government staff interactions with individual polar bear hunters" (Meek et al., 2011, p. 470), unlike Canada, there are not "formal channels" to "incorporate indigenous knowledge into decision-making" (p. 474). Upon further inspection, there are few cases across the circumpolar Arctic of the involvement of

indigenous people in the governance of resources that are similar to those found in Canada and in Nunavut. Management of resources with the Sami (the indigenous people who inhabit areas in Norway) in northern Norway bears some similarities to Nunavut. Although the Sami inhabit areas throughout Sapmi (the Sami homeland) which includes areas in Norway, Sweden, Finland, and Russia, Sami rights are more developed in Norway than in the other countries (Ween, 2012). Ravna (2013) explains that the Norwegian state lands originally inhabited by the Sami were transferred in 2005 by the Finnmark Act to the inhabitants of Finnmark County through a body known as the Finnmark Estate. It is explained that the Finnmark Estate area is now managed by a board of six directors with half of the directors appointed by the Sami Parliament and the other half by the Finnmark County Council. A major difference between the situation in Norway and Nunavut described by Ravna is that rights of ownership and possession of land by Sami in Norway have not been specified. Although the Finnmark Commission, formed based on specifications within the Finnmark Act, has a mandate to investigate "the private rights of use and ownership" (Ravna, 2013, p. 446) to land, rights to land have not been predicted by Ravna to change substantially from the established conditions even after investigation by the Commission. This is because the principles that have informed the Commission's decisions so far have given more weight to complex law within the contemporary legal system than traditional sources of law.

1.3 Attitudes and Trust in Co-management

1.3.1 Attitudes

Knowledge about the attitudes of citizens is important to understanding the effectiveness of decision-making by institutions. In any democratic society, successful governance is dependent on the cooperation of those subject to it and therefore the legitimacy of decisions are

based on trust and support from the citizenry (Putnam et al., 1994; Brondizio et al., 2009). Knowledge of attitudes defined by Glikman et al. (2012, p. 296) as "positive or negative evaluations of an object" that "are composed of cognitive (beliefs) and affective (feelings) components" is especially important in Nunavut where wildlife is co-managed. This is because not only is support or positive attitudes thought to be required for conservation success (Heberlein, 2012), but in the Nunavut wildlife co-management arrangement, local people of whom the vast majority are Inuit, are not "powerless spectators" (Fabricius et al., 2007, p. 5) but interact frequently with certain species, actively participate in management and therefore hold a lot of power in shaping and determining the success of management outcomes (Suluk & Blakney, 2008). Compliance with wildlife co-management decisions in Nunavut is therefore dependent on mutual trust and respect for the co-management regime and negative attitudes could severely limit implementation of those decisions (Clark et al., 2008). Consequently, knowledge of attitudes towards wildlife co-management could help decision makers create wildlife management that is more acceptable to the citizenry and more effective.

A mechanism that helps to create and shape attitudes is a person's life experiences. In much the same way that the nature of each case of wildlife management may be context specific based on local geography and culture (Clark & Slocombe, 2009) and may depend on the species to which the management is applied (Andersone & Ozoliņš, 2004), each person's specific attitudes depend on experiences they have been exposed to throughout their life (Zajac et al., 2012). For example, attitudes may be formed based on a person's social surroundings (Naughton-Treves et al., 2003; Kleiven et al., 2004; Campbell & Lancaster, 2010) or social identity (Heberlein, 2012) as is illustrated by the fact that people who have co-existed over a long period of time (Glikman et al., 2012), or have a cultural connection (Clark & Slocombe,

2009; Shelly et al., 2011) to large carnivore species have been shown to have a more tolerant and positive attitude towards these species.

There are two factors that have been identified to significantly affect attitudes towards wildlife management and management authorities. Attitudes towards management are greatly affected by who carries management out and how it is carried out (Mattson et al., 2006; Heberlein, 2012). Negative attitudes towards wildlife management are often produced when management strategies are enforced by authorities from afar and local people who are directly affected by management actions are not involved in decision making (Bjerke et al., 2000). This situation may cause local people to feel a loss of involvement and control (Bjerke et al., 2000), a sense of mistrust towards management authorities (Blekesaune & Rønningen, 2010), or that local needs are not being met (Suluk & Blakney, 2008). In this case, other competing attitudes may also influence attitudes towards management (McFarlane et al., 2007). For example, people may not have negative attitudes towards the management itself, but may be reacting negatively towards non-local governance (Heberlin, 2012). In addition, simply providing people with information as an attempt to change attitudes, also known as the "cognitive fix" (p. 123), has rarely worked (Heberlein, 2012) and may be considered arrogant by the people for which the information is intended (Blekesaune & Rønningen, 2010). As Heberlein (2012) clearly establishes working with attitudes will be critical to environmental decision making and developing effective environmental solutions.

1.3.2 Trust

Trust is a major component of positive attitudes and as identified previously, governing institutions depend on some level of trust from their citizenry to function in any democratic

society. Trust is defined as "an attitude of optimism that the goodwill and competence of another will extend to cover the domain of our interaction with her, together with the expectation that the one trusted will be directly and favorably moved by the thought that we are counting on her" (Jones, 1996, p.4). The importance of trust (which as the definition implies is a type of attitude) between parties involved in co-management is well documented and has been deemed by many to be a requirement of good working relations and therefore effective co-management both in the Canadian north and worldwide (Weitzner & Manseau, 2001; Olsson et al., 2004; Bruckmeier at al., 2005; Lyver, 2005; Armitage et al., 2009; Berkes, 2009; Dowsley, 2009a; Stenseke, 2009; Berkes, 2010; Mason et al., 2010; de Vos & Tatenhove, 2011; Manzoor et al., 2013; Resilience Alliance, 2013; Zulu, 2013). Specifically related to wildlife management, increased social trust in a managing agency and feelings of personal control have been recorded to raise stakeholders' acceptance of a species and their management (Zajac et al., 2012).

In order for trust to be built and maintained resulting in the development of successful co-management arrangements, there are certain conditions identified as necessary. It takes time supplemented by frequent and open communication (Armitage et al., 2009) on a personal level (Natcher et al., 2005), trustworthiness shown on multiple occasions (Brondizio et al., 2009), positive attitudes and mutual respect for each party's knowledge (Weitzner & Manseau, 2001), equitable decision making powers (Moller et al., 2009), acknowledgement of all stakeholders perspectives (Kendrick, 2003), fair and open management decisions (Gilmour et al., 2013), and adaptability (de Vos & Tatenhove, 2011). These conditions need to be maintained or else distrust between parties and of institutions can form quickly (Armitage et al., 2009; Moller et al., 2009; De Vos & Tatenhove, 2011).

Although not the central focus of this thesis, there are other attributes that depend on trust and that are required for successful co-management. The importance of cooperation (Gilmour et al., 2013), early and continual inclusion of resource users (Havens et al., 2011) leading to resource user interests being represented (Bruckmeier et al., 2005), engagement of all parties as "full partners" (Mason et al., 2010), and equity in power sharing and decision making responsibility is highlighted (Taiepa et al., 1997; Lyver, 2005). Trimble & Berkes (2013, p. 769), identify "7 faces" of co-management including "power sharing, institution building, trust building, process, learning and knowledge co-production, problem solving, and governance". Dale and Armitage (2011, p. 441) identify knowledge mobilization and co-production as attributes required for effective co-management. In fact, they view co-management "as a shared process of knowledge co-production comprising: (1) knowledge gathering, (2) knowledge sharing, (3) knowledge integration, (4) knowledge interpretation, and (5) knowledge application". Collaborative research involving governments and Aboriginal communities (Lyver, 2005) and participatory research that involves resource users, government, scientists, and non-government organizations (Trimble & Berkes, 2013) have been identified as methods to promote co-management among participants.

Since adaptive co-management has been identified as a form of co-management that may arise over time through continual learning and problem solving (Berkes, 2009), the same attributes identified as requirements for co-management are identified for adaptive co-management. Time, frequent and open communication, trust, social capital, and flexibility are identified by Armitage et al. (2009) as requirements for successful adaptive co-management. Berkes et al. (2005) describe the importance of "cross-scale linkages" (p.226) described by Young (2002) as "vertical interplay" (p. 83) or institutional connections across organizational

levels and "horizontal interplay" (p. 111) or institutional connections between organizations on similar levels but separated geographically. Such connections are indicated by Berkes at al. (2005) to be important for communication and learning and therefore a society's adaptive capacity. They go on to explain that many co-management arrangements may provide the foundation for many of these linkages which have the potential to contribute to increased adaptive capacity.

One very important attribute of successful co-management that is connected to trust in the literature is social capital. In the context of co-management, definitions of social capital include: "the social norms, networks of reciprocity and exchange, and relationships of trust that enable people to act collectively" (Armitage et al., 2009, p. 96) and "the value of trust generated by social networks to facilitate individual and group cooperation on shared interests and the organization of social institutions at different scales" (Brondizio et al., 2009, p. 255). Productive human relationships with values based on trust and collective welfare are necessary for co-management of social-ecological systems to function optimally (Natcher et al., 2005) which requires maintenance of social capital (Lin, 2001). In general, the ideas of cultural understanding, respect, equal representation, engagement, and reciprocity are identified as necessary for achieving and maintaining social capital (Natcher et al., 2005; Brondizio et al., 2009).

Maintenance of social capital is especially important to governance systems involving Inuit. White (2009) describes the importance of the process of decision making on a personal level as just as important to the outcomes as the decision itself when co-managing resources with Inuit. Taiepa et al. (1997) also emphasize the importance of equity and power sharing when co-

managing resources with indigenous peoples. “Bottom up initiatives” and “middle level agreements” (p. 236) are suggested as means to achieve this.

Since social capital figures prominently in the formation and maintenance of trust and positive attitudes, it is also important to the realization of outcomes of co-management decisions. This is because, as mentioned previously, co-management regimes or any other regime for that matter cannot always ensure compliance with decisions, so there needs to be cooperation between resource users and decision-makers for decisions to carry any weight (Brondizio et al., 2009). Consequently like has been found with higher levels of trust, support for co-management policies (Jones et al., 2012) and efficiency in problem solving (Natcher et al., 2005) have been linked to higher levels of social capital and cooperation, while imposed management regimes can destroy social capital that is crucial to the function of traditional management systems (Brondizio et al., 2009).

1.4 Wildlife Co-management in Nunavut: Benefits and Issues

1.4.1 Benefits of Participation in Co-management

Significant benefits including increased trust and cooperation between participants leading to more effective management implementation have been recorded to result from participation in co-management. Mason et al. (2010) found that co-administered management committees functioned better than purely local management committees because local management committees had issues with conflicts between stakeholders, inconsistent representation, and lack of basic funding. Brondizio et al. (2009) suggest that the connectivity and complexity of systems means management solely by local managers may not be optimal because they may not be aware of interests outside the immediate area. Brondizio et al. also

suggest that management strategies implemented by higher level institutions risk losing touch and producing feelings of illegitimacy and resistance with local resource users who have an interest in and knowledge of the place or resource being managed. Conversely, participation in co-management has been documented to increase trust between managers and resource users (Chambers, 2004; Havens et al., 2011) and address issues such as lack of consultation and inconsistent regulation that often occur in a "top down approach" (Brink et al., 2011, p.111). This finding supports de Vos and Tatenhove (2011) and Jagers et al. (2012) who indicate that there is stronger support for policies that are not only determined by government and participation in co-management or increased involvement by resource users has been documented to lead to feelings of more legitimacy and so compliance in resource management. Natcher et al. (2005) indicate co-management could help resolve conflict between indigenous people and state governments while Urquhart (2012) indicates that conflict between governments and aboriginal communities can actually act as a catalyst for co-management. Regardless of how co-management comes about, the cultural diversity associated with such a decision-making arrangement can create a "diverse set of problem-based solutions" that can be used to "guide the stewardship of natural resources" (Natcher et al., 2005, p. 240). In the Arctic where environmental change is occurring very quickly (Dowsley, 2009a), a key outcome of co-management is increased adaptive capacity that increases the ability of communities to adapt to changing socio-ecological conditions (Dale & Armitage, 2011).

1.4.2 Issues and Debates in the Co-management Literature

While significant benefits to the effective implementation of management resulting from participation in co-management have been recorded, these benefits may not be recognized as legitimate by all. For example, simply allocating decision-making power to be shared between

resource users and managers may not necessarily increase trust in management by resource users. Kruse et al. (1998) have argued that while resource user participation in a joint management board may increase managers' awareness of user concerns, trust in and cooperation with management by resource users is not increased. They suggest that a strong management presence of biologists and managers in communities is more effective at establishing trust in and cooperation with management than joint management boards. Some authors have also indicated that Indigenous people may not want to share decision-making power with government. In fact, Rodon (1998) goes so far as to refer to co-management as "co-optation" because it has forced Inuit in to a bureaucratic relationship with the government.

People participating in co-management arrangements usually come from different cultural backgrounds. Often decisions made through co-management require that knowledge in the form of Traditional Ecological Knowledge (TEK and specifically in the case of Nunavut, *IQ*) and science be combined into recommendations to governments (Nadasdy, 1999; Natcher et al., 2005; Urquhart, 2012). The prominent role TEK plays in co-management has caused some debate about the importance of local knowledge in decision-making throughout discourses on co-management. Some authors focus on the value of local knowledge or TEK to wildlife management when incorporated into empirical scientific methods (Gilchrist et al., 2005). For authors who take this standpoint, evaluation of TEK by empirical scientists is necessary for this knowledge to be considered legitimate (Gilchrist & Mallory, 2007). Howard and Widdowson (1997) argue that Traditional Knowledge (TK) should not even be incorporated into scientific research or public-policy decision-making in the first place because it cannot be "challenged or verified" (p. 46), is "too vague" (p. 48), and applies only to "subsistence living" (p. 48). They claim that the interest in integration of TK into decision-making is politically motivated, not

because TK is useful. From Howard and Widdowson's standpoint, the political climate discourages debate surrounding the validity of TK and they indicate that just because aboriginal people have a spiritual relationship to the land, does not mean that they should have more control in environmental management. The views discussed above have been rebutted very strongly and are considered, by some (Stevenson, 1997; Berkes & Henley, 1997), to be disrespectful and to be produced from a misunderstanding of TK. Nadasdy (1999) and Brook and McLachlan (2005) argue that the incorporation of TEK into decision-making based on Western science and existing bureaucratic management or evaluation of TEK by Western science marginalizes TEK and the people who hold this knowledge. In addition, Nadasdy (2003) indicates that the translation required when converting TEK to a form conducive to "state wildlife management" (p. 367) may result in distortion of that knowledge. Furthermore, even after translation, he identifies an issue related to what is referred to as "the political dimensions of knowledge-integration" (p. 367) where, in co-management arrangements, TEK is often undervalued compared to biological information. In my opinion, instances where there is an imbalance of influence as described above, do marginalize TEK and increase the power of information based on scientific management principles instead of resulting in a process of joint decision-making to which co-management regimes aspire.

Different levels of governing institutions are usually involved in co-management arrangements. Combining governance at higher levels carried out in a more official manner and governance at the local level carried out in a more personal manner (White, 2009) is another characteristic of co-management that can cause issues in implementation. For example, lack of transparency and accountability in institutions dominated by one elite group (Manzoor, 2013) can lead to poor communication, unclear rights and responsibilities, and lack of trust (Mason et

al., 2010). Although co-management is a good arena to involve stakeholders in decision-making where shared goals and visions for management of resources can be put forward and implemented, co-management regimes have been criticized for inadequately involving resources users in management and decision making (Dowsley, 2009a). Taiepa et al. (1997), identify a number of obstacles to equitable involvement of aboriginal people in co-management decision-making including divergent philosophies, lack of resources for capacity building, institutional constraints, lack of trust, and reluctance of institutions to share power. Gelcich et al. (2006) warns that government led co-management that is imposed on previously existing traditional management systems can cause the original management system to be weakened, reduce levels of trust, lead to more conflict, and reduced adaptive capacity. This is a consideration especially pertinent to northern Canada where other forms of wildlife management or co-existence strategies may already be and continue to be in place (Tester & Irniq, 2008; Clark & Slocombe, 2009). An example in Nunavut is *IQ* and the subsistence hunting strategies arising from this worldview (Dowsley & Wenzel, 2008). Another related example described by Clark and Slocombe (2009) is the practice of "respect" shown to grizzly bears by the Champagne and Aishihik First Nations of the southwest Yukon. In what is referred to as a "qualitative resource management system", resources are shared and grizzly bears' space is respected although bears are still killed if they become a problem or they are deemed to be too numerous.

1.4.3 Conceptual Differences

In Nunavut, wildlife management decisions made by the co-managed Institution of Public Government, the Nunavut Wildlife Management Board (NWMB), are based on knowledge from two very different cultural perspectives. The differences between a cultural perspective rooted in *IQ* and the Western scientific perspective results in significant conceptual differences of wildlife

management. Differences between these two perspectives or forms of knowledge have the potential to result in conflict (Dowsley & Wenzel, 2008). In this section, I will describe some of these differences and then discuss challenges of combining them into a wildlife governance system.

1.4.3.1 The North American Model of Wildlife Conservation and an Inuit View of Wildlife Harvesting

Although the concept of wildlife management has evolved since its conception by Aldo Leopold, a common theme in both the original and modern definitions is the ultimate goal of serving society's (human) needs. Aldo Leopold (Leopold, 1933) originally described wildlife management or "game management" as "the art of making land produce sustained annual crops of wild game for recreational use" (p 3). From its original objective of producing animals for hunting, Decker et al., (1992) outline a history of the Western concept of wildlife management that has traditionally been dominated by a biological perspective and define it based on a comprehensive review of the literature as "manipulating wildlife and people to meet societal goals for the wildlife resource" (p. 37). More recently, Krausman (2013) describes a more "holistic" view that defines wildlife as "free-living, wild animals of major significance to humans" and "the associated plants and lower animals… that support wildlife" (p. 1). In addition, Krausman also "considers wildlife a triad of the animal, its habitat, and people, and the interactions between them" (p. 1), however, his definitions of wildlife management are essentially the same as Decker et al's (1992).

In North America, wildlife management implementation has followed a certain pattern. Although the importance of social dimensions of wildlife management are becoming more recognized (Riley at al., 2002), and Leopold himself recognized both their importance and

segregation (Leopold, 1949), the institution of wildlife management commonly implemented in North America by governments is the North American Model of Wildlife Conservation (NAMWC) (Clark and Milloy, 2014). This, Clark and Milloy (2014) describe in the following way: "government wildlife agencies... use scientific knowledge and expertise to manage wildlife for the public good" (p. 289). They go on to write that the NAMWC is rooted in power and dominance exerted by a centralized and authoritative bureaucratic governing agency which determines who makes decisions and what information is relevant. It is indicated that the model is "founded largely on concepts of public trust, scientific management, and single and multiple use formulas" (p. 289).

Although in principle, the description of wildlife management given by the NAMWC is mostly correct, it likely gives a narrower picture of the practice of wildlife management than what occurs in reality. There may be much more to the concept of wildlife management as is understood in practice and in an academic context than the empiricism that entails "counting animals and adjusting a take based on a population-growth-curve and associated ecological, behavioural, and physiological mechanisms" (Josef Schmutz, personal communication October 27th, 2014) emphasized by Clark and Milloy (2014) when describing the NAMWC. Wildlife management is also influenced by public opinion (especially in co-management regimes) and international agreements. It seems to me, however, that in the NAMWC system, the majority of decisions made by governments about wildlife management, when they are not influenced by other political powers, are based on empirical biological data and other scientific disciplines.

According to my reading and personal experience, Inuit have a very different conceptualization of animals and harvesting rooted in *IQ* than what is understood in the concept of wildlife management in the NAMWC. As is described in the documentary *Qapirangajuq:*

Inuit Knowledge and Climate Change (Kunuk & Mauro 2010), since time immemorial, Inuit have had a system of co-existence with the environment and animals on which they depend. Although the Inuit way of life has been influenced by European contact since as early as the 14th century and groups have been relocated and centralized numerous times, due to their geographic location, many Inuit largely continued to rely on a traditional lifestyle for subsistence and lived a nomadic lifestyle until the 1950s (Suluk & Blakney, 2008).

Concepts such as ownership or wildlife fundamental to the understanding of wildlife management as is understood in Euro-Canadian culture do not apply to an Inuit worldview. Jessen-Williamson (1992) describes how there is not really an Inuit concept of ownership or control of something as is understood by Euro-Canadians, but instead a need to claim the right to "travel over 'nuna' freely" (p. 132) and to inherit or "continue to nurture" (p. 129), "respect" (p. 133) and co-exist with a "traditional habitat" (p. 129) into the future. Jessen-Williamson (1992) recounts how Inuit are connected "physically, spiritually, and culturally" (p. 133) to "nuna" or "Inuit habitat" in a complex interrelated relationship where the land provides physical and mental wellness and is exemplified by the statement: "you look after 'nuna' and it will look after you" (p. 128). Brody (2001) describes how in the language Inuktitut there is no word for ownership, but a way of speaking of a place or thing that is for the use of someone. According to Karla Jessen-Williamson (personal communication, September 30, 2013), the concept of wildlife being out there and separate wild things as is understood in Euro-Canadian culture does not apply to the Inuit worldview either. Tester & Irniq (2008) also indicate that *IQ* does not separate humans from other forms of life. In Jessen-Williamson's doctoral work (2006, p. 42), animals are said to be "self-determining free beings that fully enjoy a good life and provide the Inuit with the means of living and enrichment of their souls" and who share with Inuit in a "mutual

relationship with the natural world". Tyrrell (2007, p. 579) also describes belugas as "sentient beings who inhabit the same social space as humans and other animals". It is therefore understandable how the concept of management or control of animals that cannot be owned, who are part of nuna, and lead their own lives, by people who are also part of nuna could be difficult for a person immersed in the Inuit worldview to understand.

The importance of the Inuit relationship to the environment and animals is exemplified through their relationship to Inuit food that consists primarily of animals, fish, birds, and berries. Karla Jessen-Williamson (Personal communication, September 30, 2013) has described to me how *kalaalimerngit* (the food that Greenland Inuit, 'kalaallit', eat) has been instrumental in her research work in Greenland and that when a researcher receives country food, it is an indication that participants are accepting of that researcher. In her doctoral work, Jessen-Williamson (2006) describes how the sharing of food with research participants put everyone at ease. In Canada, local country food is known as "*Inuksiutit*: 'the staple food of the Inuit' " (Jessen-Williamson, 2006, p. 42) or literally "the makers of the Inuit" (Karla Jessen-Williamson, personal communication, October 24, 2014). It is very important to Inuit for "symbolic, physical, emotional, and spiritual identity", and like the literal translation above, the descriptions of the food may in some ways "refer to becoming Inuk" (Jessen-Williamson, 2006, p. 42-43). Wenzel (2004) describes how Inuit hunters enter into a willing relationship with animals where an attitude of sharing and using animals properly is very important while Tyrrell (2007, p. 579) reports that "through the hunting, distribution and consumption of beluga whales, social relationships are created and affirmed". Maintaining this relationship and cultural integrity is what has been said to be most important to communities in Alaska (Terry Chapin, personal communication at the TUNDRA Project workshop, Tromsø, Norway, May 3, 2014). Chapin

indicated that this cultural integrity and respect for nature is instrumental in minimizing impacts related to overharvesting.

According to this discussion so far, wildlife management implemented by North American governments is claimed to be based on scientific principles and objectivity, and exerted by a bureaucratic governing body while Inuit harvesting is more determined by cultural values based on their world view. In this argument, often scientific management plans implemented by bureaucratic institutions view the environment as passive (Schmidt & Dowsley, 2010), separate humans from the environment (Dale & Armitage, 2011), and focus on management of a single species (Natcher et al., 2005; Tyrrell, 2007; White, 2009). On the other hand, according to Brody (2001), Inuit use of land reflects adapting more than managing and "decisions must reflect reality, not be imposed on it" (p. 244). This is much different than ideas of wildlife and management in a Western scientific context where the focus is on managing or manipulating a species or system based on their value as ecosystem services.

There are many differences between the NAMWC and an Inuit view of wildlife harvesting, but there are also similarities. These similarities may be best described with the doctrine used by Clark and Milloy (2014, p. 291-293) to describe the NAMWC. Elements of the doctrine in which similarities arise include: "elimination of markets for wildlife" or animals should not be sold, "wildlife can only be killed for legitimate purpose" or animals should not be wasted, and the "democracy of hunting" or everyone should be allowed to hunt.

There are two main elements in the NAMWC that do not align with an Inuit view of wildlife harvesting and are the core differences that could result in conflict. These elements include "allocation of wildlife by law" or allocation of wildlife by outside government

influences, and "science is the proper tool for discharge of wildlife policy" (Clark & Milloy, 2014, p. 291-293).

The generalization of the concept of science within the term scientific management that Clark and Milloy (2014) indicate determines wildlife policy within the NAMWC requires an explanation. I believe the inadequacies of this generalization of science need to be addressed to understand what is actually at issue with the concept of science within the NAMWC and why it may conflict with an Inuit view of wildlife harvesting. What is alluded to by Clark and Milloy (2014) is the popular view of science accepted by the majority of society. According to Bauer (1992), "science most fundamentally and undeniably means the study of nature (p. 37)" that entails "inducing knowledge from observation" (p. 34). The popular notion of science, however, of which the essence is believed to be the scientific method, is defined by Bauer (1992, p. 19) as "systematic, controlled observation or experiment whose results lead to hypotheses, which are found valid or invalid through further work, leading to theories that are reliable because they were arrived at with initial open-mindedness and continual critical skepticism". Furthermore, Bauer (1992) indicates that the "criterion of validity in science is the consensual agreement of the scientific community" (p. 62). In a critique of what is referred to as "the myth of the scientific method" (p. 20), Bauer (1992) identifies various issues with the popular understanding of science which is referred to as "naïve" (p. 33). I believe two of these issues identified are important to this discussion. First, science covers a wide range of fields that differ in ways of thinking as well as practice and "there is not any single thing that one can usefully and globally call science" (p. 28). Therefore, although there are basic tenets followed by most scientific disciplines, because science is so broad, generalizations about science are invalid. Secondly, there is a misconception about science and the scientific method. According to Bauer, it is

believed by many that the scientific method is the reason behind the success of science. Science and scientists are highly respected in society because of this myth, but science does not always occur through the scientific method, nor do scientists who cannot be completely objective, always follow the method. Bauer refers to the method as "an ideal, not actual practice" (p. 39). Since science is perceived to be objective and to perfectly follow the scientific method, it is viewed by many as the only source that can generate true knowledge. It is therefore often more highly regarded than all other knowledge forms in making decisions about wildlife management and decision-making in general. I believe it is this second issue, the glorified societal conceptualization of science that causes problems in wildlife management and does not align with an Inuit view of harvesting.

Wildlife management that is based solely on what is believed to be purely objective and flawless scientific knowledge and is implemented by centralized bureaucratic governing institutions runs into problems in reality. Clark and Milloy (2014) recognize that wildlife conservation should be a "dynamic process of decision-making involving people, values, demands, and the reconciling of conflict" (p. 312) where "science is necessary but not sufficient for good decision making" (p. 307). Problems they identify with a system like the NAMWC include: the system not always addressing issues of importance to the public, serving some special interests more than others, not enough focus on the decision making process and too much focus on the outcomes, top down centralized management that implements inflexible comprehensive management plans that are not place specific instead of adaptive strategies grounded in experience, and dominance by experts in decision-making. They indicate that the NAMWC therefore often results in the exclusion of anyone who is not a technical scientific expert. Similarly, Bavington (2001) describes the myth of "human control over complex

ecosocial systems" (p. 20) in resource management. He uses the collapse of the Northern cod stock to illustrate the consequences to a social-ecological system of overemphasis on "technical and managerial improvements" (p. 16). Consequently, Clark & Milloy (2014) indicate that although the NAMWC has made significant contributions to wildlife conservation over the past century, it may not possess the tools to manage increasingly complex social and ecological issues or adequately address demand for a more inclusive and interdisciplinary wildlife management decision-making process. They go on to suggest transparent adaptive governance that places positivistic science in its contextual place while involving the public and experts as a plausible alternative to the NAMWC model.

1.4.3.2 Challenges to Combining Scientific Knowledge and IQ

When two very different forms of knowledge like *IQ* and knowledge based on scientific disciplines are combined to inform decisions made in co-management arrangements, issues related to disagreement between the two knowledge forms and which one is used to inform decisions have the potential to arise.

The differences in worldview between a scientific perspective and one based in *IQ* can cause there to be different interpretations or understandings of reality. What is believed to be "known" (Bauer, 1992, p. 74) described as the fundamental knowledge of what humans know and don't know, and the "known, unknown" (p. 74) described as knowledge that is partially known or known to be unknown that guides what needs to be found, may be drastically different. What is important to know and important to find out is therefore prioritized differently in each society. For example, research methods such as handling and tagging of animals by scientists may be considered disrespectful by Aboriginal people in northern Canada (Clark & Slocombe,

2009) and can cause conflicts (Dale & Armitage, 2011). According to Martin's (2012) interpretation of views of wildlife management in the 2010 documentary *Qapirangajuq: Inuit Knowledge and Climate Change*, scientists are identified as the ones who are mistreating wildlife and are affecting polar bears' ability to hunt rather than helping the animals. This has been identified as a reason that bears are causing problems in the communities. There have been numerous petitions and posts on the Facebook (2014) page "Nunavut Hunting Stories of the Day" (a webpage used by Inuit across the Arctic to share information and opinions) that describe the dissatisfaction with and consequences of collaring bears. Interpretation of similar observations may also be drastically different (Dale & Armitage, 2011). For instance, Inuit view populations as constantly moving and shifting (Tyrrell, 2007) so lower animal numbers may be interpreted as decline by science or movement/migration by *IQ* (Dale & Armitage, 2011). As another example, Nirlungayuk and Lee (2009) explain how the perspective of polar bear populations held by Inuit is based on a different temporal scale than that understood by the scientific community. They describe how the Inuit perspective has contributed to a different understanding of Western Hudson Bay polar bear subpopulation levels than what is recognized by scientists who have influenced the popular societal view of polar bear populations. The authors explain that Inuit indicate that there are more polar bears now than there were previously and that they are becoming increasingly dangerous. This is in contrast to the scientific perspective that has focused on a more recent declining trend (Regehr et al., 2007).

Authors have noted trends indicating the marginalization of *IQ* in wildlife management decision-making. These include written documentation and recognized scientific knowledge being given higher status and priority than *IQ* which is oral (Natcher et al., 2005; Dale & Armitage, 2011) or selective use of *IQ* in management (Wenzel, 2004; Tester & Irniq, 2008). An

example of scientific knowledge being given more weight than *IQ* is illustrated by the Polar Bear Specialist Group's Resolution Number One which states that traditional knowledge only carries weight if it is validated by western science (Clark et al., 2008).

Marginalization of *IQ* may also not be intentional. Scientists may simply not conduct collaborative research because they do not know how to include Inuit and *IQ* (Dale & Armitage, 2011). On the other hand, Inuit who may not have an understanding of science and who view knowledge as being based on life experience are not happy with scientists and managers who they see as only knowing about animals from what they have read, and never having interacted with them (Martin, 2012).

1.4.3.3 Challenges to Combining Bureaucratic Governance and IQ

Ideas of decision-making processes based on a perspective rooted in *IQ* are also very different from the bureaucratic governance system common in Canada. The formalized, hierarchical Western "Weberian" Bureaucracy or "Euro-Canadian" governance processes that set the framework within which co-management in Nunavut operates (White, 2006) can hinder Inuit participation and influence in governance (Armitage et al., 2009). According to Briggs (1970), Inuit radiate and value a demeanor of equanimity where control of emotions especially anger in social interactions is highly valued. Therefore, even if Inuit do not agree, they may keep quiet to avoid arguments or tension. This may be a hindrance when participating in co-management arrangements based in assertive western dominated arenas (Armitage et al., 2009). White (2009) has indicated that Inuit prefer to interact personally or to have "immediate" governance over "distant" governance and "how a government does what it does is just as important as what it does" (p. 58). The importance of equity and power sharing over a sole focus

on a conservation outcome when co-managing resources is also emphasized by Taiepa et al. (1997). The rigid time frame of decision-making within a bureaucracy is another difference to consider. Dale & Armitage (2011) describe the time frame of management and bureaucratic governance as constraining *IQ*.

There are consequences such as dissatisfaction with governance associated with the mismatch between an Inuit worldview and a bureaucratic system. Suluk & Blakney (2008) describe a growing resistance to resource management in Nunavut because of this mismatch. They explain that the NLCA was formed within the institutions of the dominant Canadian society (the south) and not understood by many people in Nunavut, so expectations of the NLCA held by many Nunavut residents and the realities experienced do not align. An example used by Suluk and Blakney is after the signing of the NLCA, instead of more authority being given to local governing bodies like the HTOs as was expected by many, residents have had to listen to and cooperate with the NWMB, researchers, and government. Another example demonstrating a mismatch in governance is the high number of workers and their turnover from outside Nunavut in middle management and professional positions and the low numbers of Inuit in these positions (White, 2009).

1.5 Low Trust, Dissatisfaction, and Potential Consequences in Nunavut

1.5.1 Potential Reasons for Low Trust and Dissatisfaction

There is a history of imposed governance in what is now Nunavut that may still influence levels of trust in governance and cause dissatisfaction with management. Previous to co-management, Inuit were excluded from governing processes (Brody, 1975; White, 2006). Inuit were not asked what they thought by scientists or the government (Urquhart, 2012) who thought

they knew what was best for Inuit and the land (Brody, 1975). As Jessen-Williamson (1992, p. 130) stated, "Laws, regulations, organizational structures, quotas, lines of communication, sanctions and rights for non-Arctic, non-Inuit interests tend to be presented to the Inuit as already institutionalized, before the people have been informed, let alone consulted". Given the "cultural need of Inuit to feel free" (Suluk & Blakney, 2008, p. 68), according to Brody (1975), many Inuit may have felt that the government was not trying to help and instead seemed to desire political incorporation to make Inuit life more like that of Canadian Society as a whole.

Now after the NLCA has been settled, there is more collaboration between Inuit and governments, but tension may still exist. White (2006) indicates that Inuit now play an important role in governance and there is more involvement of Inuit in decision-making. In fact, Dowlsey (2009a) describes Nunavut as moving towards adaptive co-management and their polar bear management system as an adaptive system. Nevertheless, although communities and Inuit organizations may control how resources are harvested, they do not necessarily control the numbers harvested, and the Federal or Territorial Government can still supersede NWMB decisions and have the final say in setting quotas where a quota is deemed necessary (Dale & Armitage, 2011). Therefore, the combination of a history of imposed governance, tension between wildlife managers and Inuit (Tester & Irniq, 2008; Collings, 2009; Kotierk, 2012) who may view resource management as restricting and threatening (Suluk & Blakney, 2008), and perceived imbalance of power could lead to low trust and feelings of powerlessness and resentment (Brody, 1975). Nashook (2010, as quoted in Martin, 2012, p. 1) sums up a common feeling in Northern Canada that still holds true for some: "Southerners don't want to understand Inuit ways. They're ignorant about our culture, don't consider our opinion and treat us like we know nothing".

Changes to Inuit lifestyle and environment have occurred recently and continue to occur rapidly that can also contribute to tense situations resulting in low trust. Social change such as a shift in governance structure from "civic order" to enforced "public order" (Clark et al., 2008, p. 355) as well as a rapid immersion into western culture and economy has occurred relatively recently (Suluk & Blakney, 2008). Social change is still being pushed forward by the increased global interest in the North (Kunuk & Mauro, 2010), as well as increased disturbance and economic activity associated with resource development (Paulette, 2010). Now, Inuit are also adapting to rapidly changing ecological conditions (Clark et al., 2008). These drastic biophysical changes include less and thinner sea ice, earlier ice breakup, changing animal behaviours, and warmer temperatures (Kunuk & Mauro, 2010).

Many Inuit remember past wildlife management decisions based on scientific findings that have not always been right. These instances remain in the Inuit collective memory for a long time and are a reason why Inuit may not trust wildlife management based on scientific principles. For example, Campbell (2007) describes the significant decline of the Qamanirjuaq caribou herd recorded by scientists in the 1950s. According to scientists, the herd declined to about half of its numbers from 1950 to 1968, but then increased and reversed the trend by 1982 (Heard & Calef, 1986). Campbell (2007) writes that the perceived decline was not a mystery to the local hunters because local knowledge did not agree with the scientific knowledge. Furthermore, the perceived caribou "crisis" of that era was based on what, according to Ruttan (2012), were flawed population estimates that created a sense of urgency and lead to recovery measures that have been described as "ill-informed" and "inappropriate" (p. 85). Ruttan goes on to explain that the perceived decline was largely attributed to harvest by Inuit hunters and wolves. Many Inuit in the area were then targeted with strict caribou hunting regulations while some were subjected to

relocation and pressured to switch to a fish diet. Extensive wolf poisoning also occurred. As another example, Dowsley (2009a) describes how in 1996, Inuit hunters reported that the M'Clintock Channel polar bear subpopulation was in decline, and quotas were reduced. A later scientific study showed that the population was in fact declining. Two more examples illustrate instances of management decisions that have the potential to cause mistrust. Nirlungayuk and Lee (2009) explain how the differences between the Inuit and scientific community's perspective of the Western Hudson Bay polar bear subpopulation referred to previously has resulted in confusion and frustration felt by Inuit over decisions about polar bear management that are viewed as unfair and constricting. Population estimates of bowhead whales that have been indicated to be too low by Inuit hunters for many years have also proven to be too low and the population higher than scientists previously thought (George, 2009).

Institutions and organizations from around the world impact wildlife management in Nunavut and can contribute to a feeling of powerlessness felt by *Nunavummiut* (the people inhabiting Nunavut). Outside influences such as national legislation, international conventions, agreements, and markets, as well as national and international pressure from the public and activists can greatly affect wildlife harvest in northern Canada (Clark et al., 2008). For example, in 2005 the NWMB and Government of Nunavut were criticized by National and International organizations for increasing the polar bear Total Allowable Harvest (TAH) for the Western Hudson Bay (WH) subpopulation based on *IQ* that was not supported by scientific knowledge (Dowsley & Wenzel, 2008). According to Nirlungayuk and Lee (2009), the WH polar bear TAH was once again reduced in 2007 to reflect scientific population estimates. The authors indicate that this increased the burden on affected communities by increasing the pressure that bears

killed in defence put on finite quotas, and decreasing the number of bears available for subsistence and sport hunting.

Sport hunting of polar bear is greatly affected by influences outside of Nunavut and is an example that should be expanded upon. Sport hunting of polar bear is also known as "conservation hunting" (Freeman & Wenzel, 2006, p.21). I will refer to the concept as conservation hunting for the remainder of this thesis because this term does not incur connotations of a game or amusement as is often associated with the term sport hunting. Although polar bears were traditionally hunted for their meat and hides, they became economically important during the fur trade (Wenzel, 2009). Conservation hunting of polar bear where non-Inuit are guided on a polar bear hunt by Inuit was developed under the influence of government support to increase income in northern Canada (Dowsley, 2009b) after international markets banned the import of seal skins in response to seal hunt protests in the 1970s and 1980s (Clark et al., 2008). Clark et al. (2013) claim that more recently, the polar bear has become a symbol of climate change. They explain that the listing of the polar bear under the United States Endangered Species Act (ESA) in 2008 with the associated restriction on conservation hunt trophies being brought into the United States has likely been the cause of a significant reduction in hunts. According to Tyrrell & Clark (2014), fewer hunts have resulted in an associated reduction in economic gains from conservation hunting in Nunavut.

The trend of the polar bear as a symbol of climate change has continued. The ESA listing was followed in 2009 by a proposal to restrict the international commercial trade of polar bear products by upgrading the polar bear listing under the Convention on the International Trade in Endangered Species (CITES) from threatened to endangered (Appendix II to Appendix I) (Clark et al., 2013). The proposal was defeated, however there has still been pressure to implement the

designation (Flocken, 2012) and the upgraded listing was again proposed by the governments of the United States and Russia in March, 2013 (Tyrrell & Clark, 2014). The proposal was again defeated, but according to Tyrrell & Clark (2014), prior to the CITES meeting, various animal rights and environmental organizations promoted a ban on the trade of polar bear parts through manipulation of scientific and government data. This had the effect of shifting the public's focus from the true threat to polar bears, that presented by climate change. According to Clark et al. (2013) the trade in polar bear parts does not influence quotas set by co-management regimes or for that matter the number of bears harvested, but restrictions under the ESA or CITES may fulfill government desire to enact feasible policy to address the issue of polar bear conservation without having to address the problem of climate change. Therefore by reducing local economic gain and control related to conservation hunting, the designations discussed above likely propagate Inuit feelings of resentment towards people, governments, and organizations who in the eyes of Inuit are disrespectful, make false accusations, and are imposing on their way of life (Kunuk & Mauro, 2010; Clark et al., 2013). Given the abundance of wildlife in Nunavut and that 12 out of 19 of the world's subpopulations of polar bears live there (Dowsley, 2009a), potentially volatile or uncooperative attitudes of local people cannot be a good development.

In summation, there are two main reasons why trust may be low or there is dissatisfaction with wildlife management in Nunavut. Dissatisfaction with management may be related to power dynamics and feelings that self-determination and representation of local knowledge are lacking within the co-management institutions (Rodon, 1998; White, 2006). Local people may also be satisfied with the process of management itself and only seek to change the outcome of management or the established quota to fit needs and changes (Clark & Slocombe, 2011).

1.5.2 Potential Consequences of Low Trust and Dissatisfaction

Even now with the settlement of the NLCA and the implementation of co-management institutions, there is evidence that Inuit in Nunavut are dissatisfied with some wildlife management decisions. Suluk and Blakney (2008) describe this dissatisfaction and explain how it has led to conflict in the form of resistance to management strategies as well as resistance to participation in wildlife monitoring and the upkeep of records of wildlife harvested. In what is described by some to be an otherwise successful co-management regime (Clark et al., 2013), important details such as records of harvested animals are based on trust and respect for the institution of co-management.

In addition to the resistance to participation in wildlife monitoring recorded, significant consequences of low trust and dissatisfaction with management have been predicted. “In a time when the impact of climate change on Inuit communities often takes a back seat in the media to southern concerns about polar bear populations” (Martin, 2012, p. 1), imposed, constricting management regimes or quotas that do not align with local objectives may not only restrict the adaptive capacity of Inuit in a changing environment but may lead to a reluctance to report animals harvested for fear of uncontrollable outcomes (Dale & Armitage, 2011) or resentment, mistrust, and refusal to cooperate (Mallory et al., 2006; Tyrrell, 2007; Clark et al., 2008; Suluk & Blakney, 2008; Dowsley, 2009a; Kunuk & Mauro, 2010). Specifically, Clark et al. (2009) have speculated that conflicts in polar bear management related to respect, the distribution of power, or decision-making based on biological science that does not include Inuit resource users may result in regulations being ignored or outright defiance of co-management decisions by Inuit. It is indicated that such a situation could potentially lead to the breakdown of the institution of wildlife co-management in Nunavut which could contribute to management and conservation

outcomes not being met (Clark et al., 2008). Similarly, Nirlungayuk and Lee (2009) indicate that many Inuit do not feel that *IQ* is treated fairly or that their opinions are being acknowledged in decision-making about polar bears. They suggest that if co-management is to move forward, more consideration will need to be given to Inuit perspectives of polar bears.

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CHAPTER 2: LOCAL ATTITUDES TOWARDS WILDLIFE CO-MANAGEMENT IN THE KIVALLIQ REGION OF NUNAVUT: IS DISSATISFACTION AN OUTCOME OF CO-MANAGEMENT IMPLEMENTATION OR POLAR BEAR CONFLICT?

2.1 Introduction

2.1.1 Attitudes and Wildlife Co-management

Whether it is polar bear management or any other public issue, knowledge about the attitudes of citizens is important to understanding the effectiveness of decision-making by institutions. In any democratic society, successful governance is dependent on the cooperation of those subject to it and therefore the legitimacy of decisions are based on trust and support from the citizenry (Putnam et al., 1994; Brondizio et al., 2009). More specifically to the context of wildlife management, support or positive attitudes are thought to be required for conservation success (Heberlein, 2012) and stronger support from resource users for policies that are not only determined by government has been documented (Jones et al., 2012). Therefore, knowledge about local attitudes towards wildlife management strategies is important the implementation of management that is more acceptable to the citizenry and with minimal conflict (Glikman et al., 2012; Zajac et al., 2012). Asking the public their opinion is identified by Kotierk (2012) as integral to decision-making and in providing decision-makers with accurate information with which "measurable management goals" (p. 40) can be set.

Knowledge about the attitudes of local *Nunavummiut* (the people inhabiting Nunavut who, by a vast majority, are Inuit) towards wildlife management is especially important in Nunavut where wildlife is co-managed by an Institution of Public Government with representation from the Federal Government, Territorial Government, and Inuit Organizations. Local Inuit are not "powerless spectators" (Fabricius et al., 2007, p. 5) in this co-management arrangement, but interact frequently with certain species, actively participate in management and

therefore hold a lot of power in shaping and determining the success of management outcomes (Suluk & Blakney, 2008). In addition, the importance of building and maintaining trust between the parties involved in co-management is well documented and has been deemed by many to be a requirement for effective co-management of social ecological systems (Olsson et al., 2004; Armitage et al., 2009; Berkes, 2009; Dowsley, 2009a; Berkes, 2010; Resilience Alliance, 2013).

2.1.2 Purpose

This article explores Inuit attitudes and trust in co-managing wildlife in the communities of Igluligaarjuk (Chesterfield Inlet), Qamani'tuaq (Baker Lake), and Tikirarjuaq (Whale Cove), Nunavut[2]. Based on interviews conducted in the three communities, I explore what Inuit in the participating communities think about management of various species of wildlife, who Inuit think is reliable regarding information about animals, what Inuit levels of trust in governing institutions are, and why these attitudes and levels of trust may have arisen. I then discuss potential broader implications of Inuit attitudes expressed in co-managing wildlife and what they may mean for implementation of wildlife co-management in Nunavut. Through documentation of attitudes in co-managing wildlife in the three participating communities, I hope this study will contribute to an increased understanding of Inuit goals in wildlife management in the Kivalliq Region of Nunavut and to discourses about co-management in Nunavut.

The international attention and changing circumstances surrounding polar bears has resulted in an increased emphasis on polar bear management by research participants in the coastal communities. The emphasis on polar bear management expressed by participants is

[2] At the request of the communities, Inuktitut names have been used where possible and are used interchangeably with English names. For reference Igluligaarjuk is Chesterfield Inlet, Qamani'tuaq is Baker Lake, and Tikirarjuaq is Whale Cove. These communities are all located in the Kivalliq Region of Nunavut.

therefore reflected in this article. Participants expressed a clear dissatisfaction with polar bear management which was in contrast to a general satisfaction with or indifference to the management of other species asked about. Other important trends expressed in all of the communities included: local governing institutions were more highly trusted and regarded to be the most important, and people and institutions who were in contact with animals and local people were viewed as more reliable sources of information about animals.

2.1.3 Polar Bear Management

Management of polar bears is highly contested. Many people not only within the Circumpolar North, but also continental Europe and continental United States have been exposed to the issue and formed an opinion - sometimes well founded, often not - about polar bear management. Polar bear management may therefore present more challenges that result in controversy than instances of wildlife management involving other less high profile species. Much of the controversy is rooted in different understandings of polar bear population numbers and distribution as well as how decisions about management are made. Rapid social and ecological change occurring in Arctic areas renders decision-making especially difficult (Clark et al., 2008).

A major source of controversy is the prevailing scientific understanding that has influenced the popular societal view of polar bear populations. The popular understanding of polar bear population dynamics is quite different from the understanding of local Inuit living in the communities of the Western Hudson Bay in Nunavut where this research has taken place. Biological studies have documented decline in reproductive output, condition (Stirling et al., 1999), and therefore survival (Regehr et al., 2007) of polar bears in the Western Hudson Bay

polar bear subpopulation beginning in 1984. This population decline has been correlated to earlier ice breakup caused by a warming climate that limits polar bear access to seals (Stirling et al., 1999; Stirling & Parkinson, 2006; Amstrup et al., 2008) and is predicted to continue as sea ice continues to breakup earlier (Regehr et al., 2007; Obbard et al., 2010). Inuit living in the communities of the Western Hudson Bay who are experiencing increased encounters with polar bears, strange polar bear behaviour, property damage, and high numbers of polar bear defense kills despite restraint by community members (Akavak, 2011) do not think that the subpopulation has declined (Nirlungayuk & Lee, 2009; Kotierk, 2012). In fact, many Inuit indicate that the bear population has increased.

The idea of wildlife management as is understood in a Euro-Canadian context is unfamiliar to an Inuit worldview and may not properly address wildlife management issues in Nunavut. Since time immemorial, Inuit have had a system of co-existence with the environment and animals on which they depend (Kunuk & Mauro 2010). They therefore have a very different understanding of the concepts of animals and harvesting than what is understood in the process of wildlife management within the North American Model of Wildlife Conservation (NAMWC) (Clark & Milloy, 2014) commonly implemented by North American governments. The NAMWC is described by Clark and Milloy (2014) in the following way: "government wildlife agencies... use scientific knowledge and expertise to manage wildlife for the public good" (p. 289) and is set in a "Weberian" bureaucracy (White, 2006, p. 401) that is formalized and hierarchical. This is in contrast to an Inuit worldview where personal interaction is preferred (White, 2009), harvesting of animals is fundamental, humans are not separated from other forms of life (Tester & Irniq, 2008), and interaction with the environment may more reflect adaptation versus management (Brody, 2001). Management influenced by the NAMWC may therefore not

possess the tools to manage increasingly complex social and ecological issues or adequately address demand for a more inclusive and interdisciplinary wildlife management decision-making process (Clark & Milloy, 2014) in Nunavut.

Influences from outside Nunavut such as international legislation, conventions, agreements, and markets as well as national and international pressure from the public and activists that have been influenced solely by the prevailing scientific understanding of polar bear populations also impact polar bear management (Clark et al., 2008). Nirlungayuk and Lee (2009) indicate that many Inuit do not feel that *Inuit Qaujimajatuqangit* (the traditional knowledge of the Inuit or literally "that which Inuit have always known to be true" (Tagalik, 2010, p. 1)) is treated fairly or that their opinions are being acknowledged in decision-making about polar bears. In a time when the polar bear has become an international symbol of climate change (Clark et al., 2013), decision-making based on biological science that has excluded Inuit resource users has resulted in confusion and frustration felt by Inuit over decisions about polar bear management that are viewed as unfair and constricting (Nirlungayuk & Lee, 2009; Clark et al., 2009).

Animals are an integral part of the lifestyle and culture of Inuit and the constitutionally protected Nunavut Land Claims Agreement stipulates co-management of wildlife. Therefore, Inuit who live in Nunavut and co-exist with the wildlife there, likely have the greatest stake in management of that wildlife. This is supported by some resource management theory that suggests local people have the greatest stake in local resources and therefore should have more power in their management (Berkes, 2003). The theory described above builds on the principle of subsidiarity that promotes decentralization and in the context of political decisions that decisions should be made at the lowest level possible (Spicker, 1991). Management of polar

bears in the Western Hudson Bay is no exception to the principle of subsidiarity and of the 19 subpopulations of polar bears found throughout the world, 12 of these subpopulations live in Nunavut (Dowsley, 2009a). Therefore the stake and influence Inuit in Nunavut hold in polar bear management is not only important to polar bears in Nunavut but to polar bear management worldwide.

The stake Inuit hold in wildlife co-management in Nunavut means that they play a strong role in influencing the successful realization of the outcomes of wildlife management decisions. Even now with the settlement of the NLCA, and the implementation of co-management institutions, there is evidence that Inuit in Nunavut are dissatisfied with some wildlife management decisions leading to conflict in the form of resistance to participation in wildlife monitoring and upkeep of records of wildlife harvested (Suluk & Blakney, 2008). In what is described by some to be an otherwise successful co-management regime (Clark et al., 2013), important details such as records of harvested animals are based on trust and respect for the institution of co-management and conflict as described above may contribute to a reluctance to report animals harvested for fear of uncontrollable outcomes (Dale & Armitage, 2011). Specifically, Clark et al. (2009) have speculated that conflicts in polar bear management may result in regulations being ignored or outright defiance of co-management decisions by Inuit. It is indicated that such a situation could potentially lead to the breakdown of the institution of wildlife co-management in Nunavut which could contribute to management and conservation outcomes not being met (Clark et al., 2008).

2.2 Methodology

2.2.1 The TUNDRA Project

This study was initiated and carried out in conjunction with the TUNDRA Project. TUNDRA is an international project with collaboration between universities in Norway, Russia, Canada, and Alaska based at the University of Tromsø in Northern Norway. "The goal of TUNDRA is to determine how environmental governance and socio-economic conditions affect ecosystem states and services relevant to resource-dependent communities" across the Arctic (TUNDRA, 2012a). There are various ecosystem management strategies employed throughout circumpolar Arctic areas, and local people's ability to adapt to changing Arctic conditions will differ based on management responses (TUNDRA, 2012b). TUNDRA therefore employed an alternative comparative analysis approach referred to as a "comparative spatial approach" that combined the ecological and social sciences (TUNDRA Crosscut, 2012) to analyze different management practices in order to produce results relevant to ecosystem-based management (TUNDRA, 2012a). The "comparative spatial approach" focused on the similarity of the tundra biome to control for biophysical factors in order to study the contrast in management strategies, environmental governance, and socioeconomic conditions and their effect on ecosystems and people (TUNDRA Crosscut, 2012).

2.2.2 Choice of Study Sites

During the initial stages of the TUNDRA project, Arctic regions in Canada, Russia, Norway, and Alaska associated with TUNDRA were compared based on official statistics and published data of indirect and direct drivers of change. From this research, communities within the regions were selected as study sites by the TUNDRA project steering committee.

Communities were selected to maximize contrasts in governance between regions and contrasts in socioeconomic conditions and opportunities for wage income between communities. The communities selected were also required to be in similar Arctic regions on the mainland. In Canada although the communities of Igluligaarjuk (Chesterfield Inlet), Qamani'tuaq (Baker Lake), Tikirarjuaq (Whale Cove), and Kangiqliniq (Rankin Inlet) were selected, permission first had to be granted from the Nunavut Research Institute and the communities themselves before research could take place.

2.2.3 Research Process

After the communities were selected and the preliminary background research was conducted, a standardized interview guide to be used in all of the countries was developed iteratively by the TUNDRA project steering committee. The interview guide was broken up into three sections of questions entitled: 1. Landscape connection, 2. Harvest and local management of ecosystem services, and 3. Local influences-governing interactions. These questions were written with the intent of understanding how local people use the land and sea, what resources are important, and local peoples' observations about environmental management and decision-making processes. In Nunavut, the interview guide was modified to fit the local context and to better represent community priorities. Such an approach is reflective of many of the qualities of the new research paradigm in Northern Canada, the importance and productiveness of which has been demonstrated by Wolfe et al. (2011) in their International Polar Year study with the community of Old Crow.

Preliminary visits to potential Canadian communities in Nunavut by TUNDRA Project leaders Vera Hausner and Else Grete Broderstad along with Canadian TUNDRA representatives

Douglas Clark and I took place during the winter from the 11-21 of March 2013. The purpose of these visits was to discuss the project with the Hunters and Trappers Organizations (HTOs) of each community to determine if they were interested in participating, and find out what communities would like to see happen with the project. The HTOs are community organizations made up of an elected board of community members that oversees harvesting at the community level and represents each community's harvesting interests. The HTOs of Igluligaarjuk, Qamani'tuaq, and Tikirarjuaq expressed interest in the project. Once community interest in the project was confirmed, a Social Science and Traditional Knowledge Research License from the Nunavut Research Institute was applied for and granted. Ethical approval for the research was also granted by the University of Saskatchewan Behavioural Research Ethics Board.

Over the summer from the 9 of June to the 9 of August 2013, I traveled to the communities who agreed to be part of the project to conduct interviews. The participating communities included Igluligaarjuk, Qamani'tuaq, and Tikirarjuaq which are all in Kivalliq Region of Nunavut. In all three of these small fly in communities, the population is predominantly Inuit and Inuktitut is the primary language spoken although many people also speak English. Based on 2011 census data, the most current population estimates for Chesterfield Inlet, Whale Cove, and Baker Lake are 393, 463, and 2140 respectively (Nunavut Bureau of Statistics, 2014). Both Tikirarjuaq and Igluligaarjuk are located on the coast of the Western Hudson Bay while Qamani'tuaq is the only inland community in Nunavut located on the shores of Baker Lake. Subsistence harvest of animals and use of the land is common and important both as a source of food and for cultural identity in all of the communities.

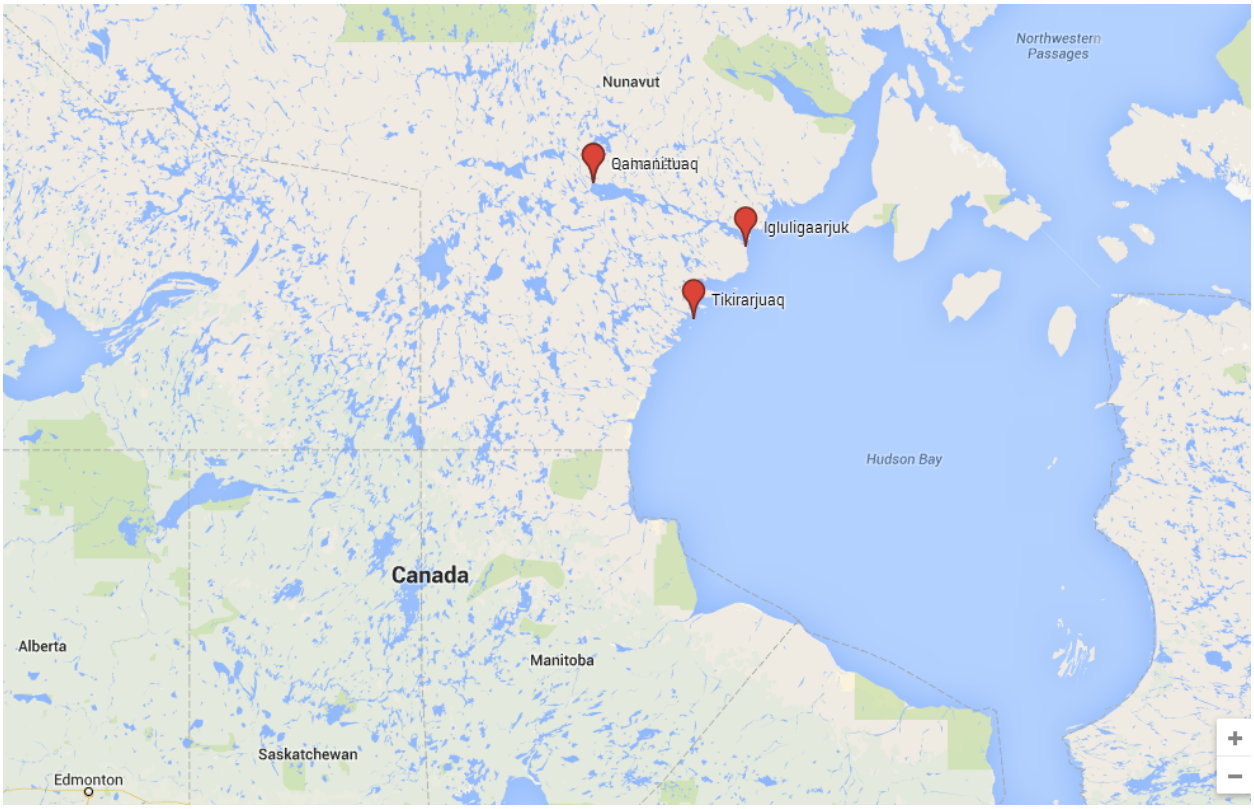

Figure 2.1. Map showing locations of participating Western Hudson Bay communities including Qamani'tuaq, Tikirarjuaq, and Igluligaarjuk (Google Maps).

Before any interviews were conducted, the HTO of each community confirmed that interviews were the best way to gather the desired information and that the interview questions were appropriate. A research agreement specifying how research would be carried out, how the data would be used, and how the research would be returned to the communities was also drafted and signed.

Using the TUNDRA interview guide, interviews were conducted in a respectful and open manner on the basis of informed consent and guided by community consultation as is specified in the booklet *Ethical Principles for the Conduct of Research in the North* (ACUNS, 2003). Participants were well informed through a consent form about the project and were aware that

questions were not required to be answered if participants did not feel comfortable answering them. The consent form also offered the opportunity for anonymity but most participants indicated that they wanted any direct quotations used in publications attributed to them by name.

Participants were selected by the HTO of each community based both on knowledge of the proposed subject matter and to represent perspectives of a variety of community members. All of the participants were or had been active subsistence harvesters. Inuktitut translators were also selected by the HTO and made available for unilingual participants. In each community, 16-18 interviews were conducted. In total, 50 interviews were conducted and 19 interviews required translation. Overall, 12 participants were female, 38 were male, and all identified as Inuk. The average participant age was 58 years old with the youngest being 21 and the oldest 84. Interview times averaged approximately 2.5 hours, but were as long as nearly 6 hours, and as short as 45 minutes. Interviews were recorded with permission.

Data gathered from the interviews was a mixture of landscape and resource use mapping as well as responses to categorized and open questions. Results I have included in this article are based on quantitative data consisting of answers to questions that were able to be categorized allowing comparative analysis of trends. Qualitative data such as comments associated with the categorical questions were analyzed to give further insight into what participants were saying and why.

During the spring from the 16-24 of June 2014, following data analysis, but before research results were finalized and published, Douglas Clark and I presented the results to the HTOs of each community and any study participants or interested community members. These presentations were a process of verification of the results also known as “member checks”

(Cresswell, 1998, p. 202) where community members provided feedback and indicated if what the results were representing was accurate. It was also an opportunity for us to inform the HTO and study participants about the results and findings from the other countries involved with TUNDRA. The results were received well by all participating communities and reporting back the findings proved to be a very important part of the research process. Reporting back of the findings was important both to ensure accuracy of the results and to maintain relationships and community support for the research as has been demonstrated by numerous authors including Stewart and Draper (2008). Copies of interview recordings, raw data, maps made from the research, as well as results and summaries of the results were left with the HTO of each community. Publications produced from the TUNDRA Project will be sent to the HTOs as well as any project participant upon request.

2.2.4 Limitations of Research

This research is representative of the opinions of Inuit interviewed in the communities of Igluligaarjuk, Qamani'tuaq, and Tikirarjuaq, Nunavut, Canada. The participants in this research were not selected at random but were selected through consultation with the HTO of each community with the intention of obtaining a sample of a variety of participants who were knowledgeable about the proposed subject matter. Therefore, results are based entirely on a worldview of Inuit who are active or have been active resource users and are the product of a living social context. Although the participants were not randomly selected, I believe the results represent the general consensus within each community. This view is also supported by the participating HTOs.

With a method of research based on the perspectives of research participants, issues related to the validity of the research may arise. Collings (2009) describes two of these dangers. One is that the researcher assumes the participant is interested, willing to help, and therefore gives reliable information. The other is that information may be misinterpreted. Both considerations are valid to this research, however, given the intensity and enthusiasm with which most participants discussed their opinions about animals (especially polar bears), management, and their trust in governance, I believe the reliability of the information given by participants on these topics is as accurate from their perspective as is possible. In addition, the results have been presented to the HTOs of each community as well as to participants and community members who were interested. Therefore through validation of results, I believe that the likelihood of misinterpretation has also been minimized. One point to consider is that some information or topics related to opinions about wildlife management may have been missed because I did not specifically ask about them. Again I think this was minimized through verification of results, but missing pieces of this work will likely reveal themselves when finished products are reviewed by participating communities which may in turn lead to further research questions.

2.3 Results

My principle objective was to understand attitudes towards wildlife co-management in Qamani'tuaq, Igluligaarjuk, and Tikirarjuaq and implications of those attitudes for on the ground implementation of wildlife co-management in Nunavut. While the focus of these results is on what study participants said about management of various species of wildlife, results of other indicators that may give insight and increase understanding of attitudes towards co-management in Nunavut have also been included. These other indicators of attitudes include which sources

participants think are most reliable or trustworthy regarding information about animals, levels of trust in various governing institutions, and which institutions are the most important.

2.3.1 Success of Wildlife Co-management

In order to gain an understanding of what participants thought about wildlife management in Nunavut, participants were asked if they thought various species of commonly harvested terrestrial animals as well as polar bear were managed successfully (Figure 2.2). Excluding polar bear, between 34% and 40% of participants indicated they were satisfied with management for all the species asked about, while 16% indicated satisfaction with management of polar bear. Once again excluding polar bear, 4-8% of participants indicated dissatisfaction with management for all species, while 52% indicated dissatisfaction with polar bear management. For all of the animals asked about, 2-10% of participants indicated they were partly satisfied with management. The remaining participants who did not indicate whether they thought the various species were managed successfully either indicated that they did not know whether animals were managed successfully (8-12%), that management was not applicable (4-8%), or they provided no response (28-36% except for polar bear where 12% did not respond).

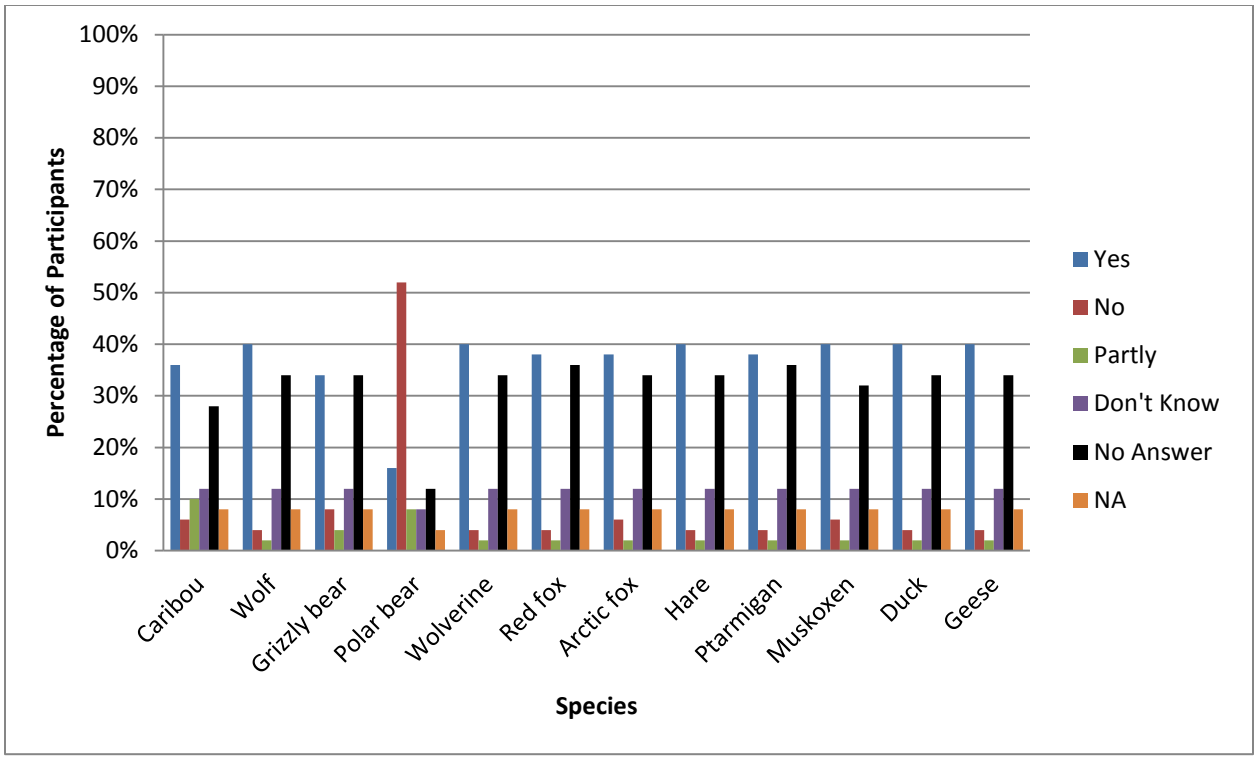

Figure 2.2. Do you think the following species are managed successfully by those responsible? Answers from Igluligaarjuk, Qamani'tuaq, and Tikirarjuaq.

These results show that overall, except for attitudes towards polar bear management, attitudes towards the management of wildlife were generally quite similar and more positive or indifferent than negative. Participants indicated much less satisfaction and much more dissatisfaction with polar bear management. In addition, there was a higher overall response rate when participants were asked about polar bear management compared to other species which may indicate that the topic of polar bear management is more important to participants. The higher response rate and the uniformly negative responses expressed towards polar bear management make it a trend that is important to understanding Inuit attitudes in co-managing wildlife as well as to understanding what in wildlife management is important to Inuit.

2.3.1.1 Polar bears

By far the most talked about and controversial wildlife species in the two coastal communities of Igluligaarjuk and Tikirarjuaq was polar bear. Polar bear management really only applies to the coastal communities, but even a couple of participants in Qamani'tuaq which is inland, expressed concern about polar bears and quotas on the coast. If Qamani'tuaq is taken out of the analysis, dissatisfaction with polar bear management is even more striking (Figure 2.3). When only Tikirarjuaq and Igluligaarjuk were analyzed, 9% of participants expressed satisfaction with polar bear management compared to 38-41% for all other species and 71% expressed dissatisfaction with polar bear management compared to 3-6% for all other species.

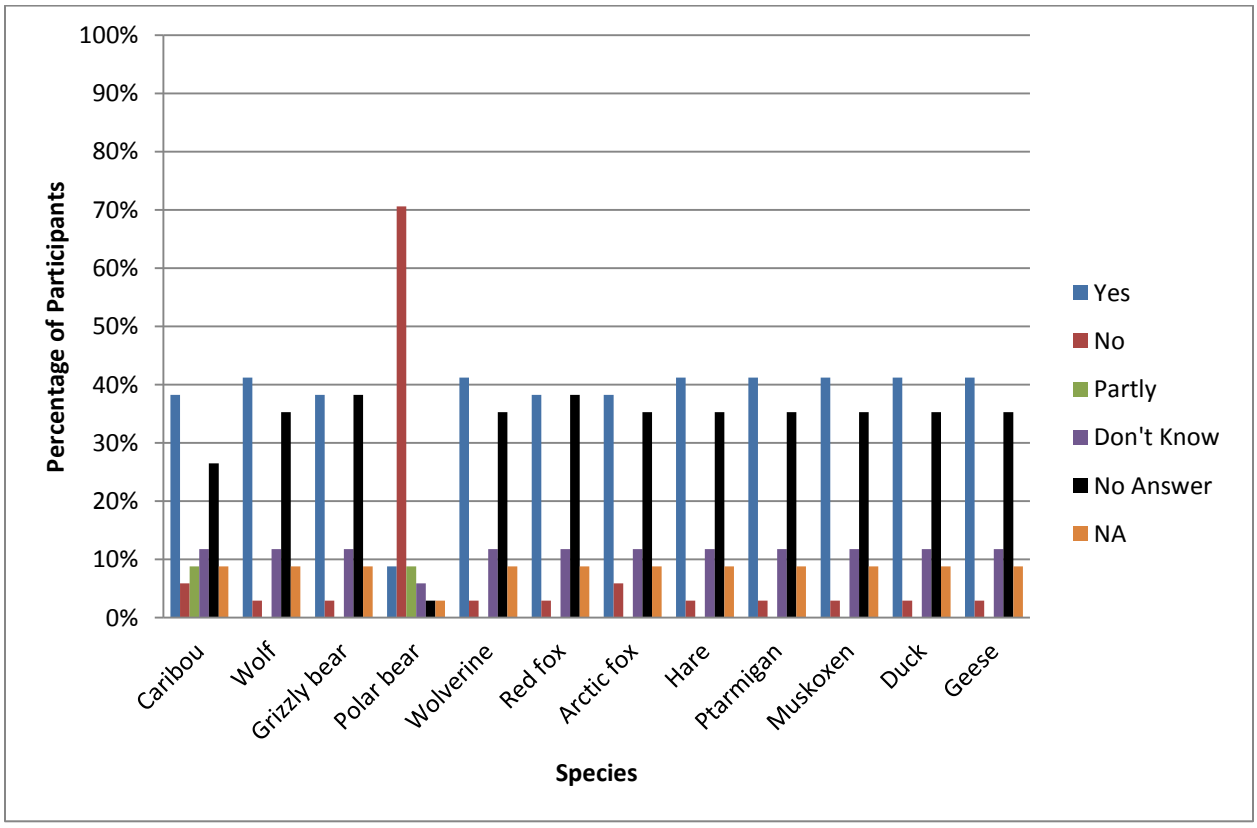

Figure 2.3. Do you think the following species are managed successfully? Answers from Igluligaarjuk and Tikirarjuaq.

Attitudes towards polar bear management are clearly quite different than attitudes towards management of other species, which in general were quite homogeneous. Many who expressed satisfaction with management of other species indicated dissatisfaction with polar bear management. As well, many of the participants who did not respond, did not know, or did not think management was applicable when asked about management of other species, indicated dissatisfaction with polar bear management. The potential significance of 'non-responses' or 'don't know' responses could be interpreted in various ways. Participants may have simply not known about management for those species to which they did not respond. Participants who expressed an opinion about polar bear but also indicated that they did not know or did not respond for other species likely did not think management of the species where an opinion was not expressed was important. Since there may be no regulation of some of the species, participants may also not see any management of those species in action. This may also have caused participants not to respond.

Many participants were also dissatisfied with polar bear population numbers. In Igluligaarjuk, 50% of participants indicated there were too many polar bears and a decrease in population would be desirable while in Tikirarjuaq, 38% indicated there were too many. Almost all of the other participants indicated that the polar bear population is fine. The vast majority of participants in these communities viewed polar bears as dangerous or a nuisance and as not managed well (Figure 2.4).

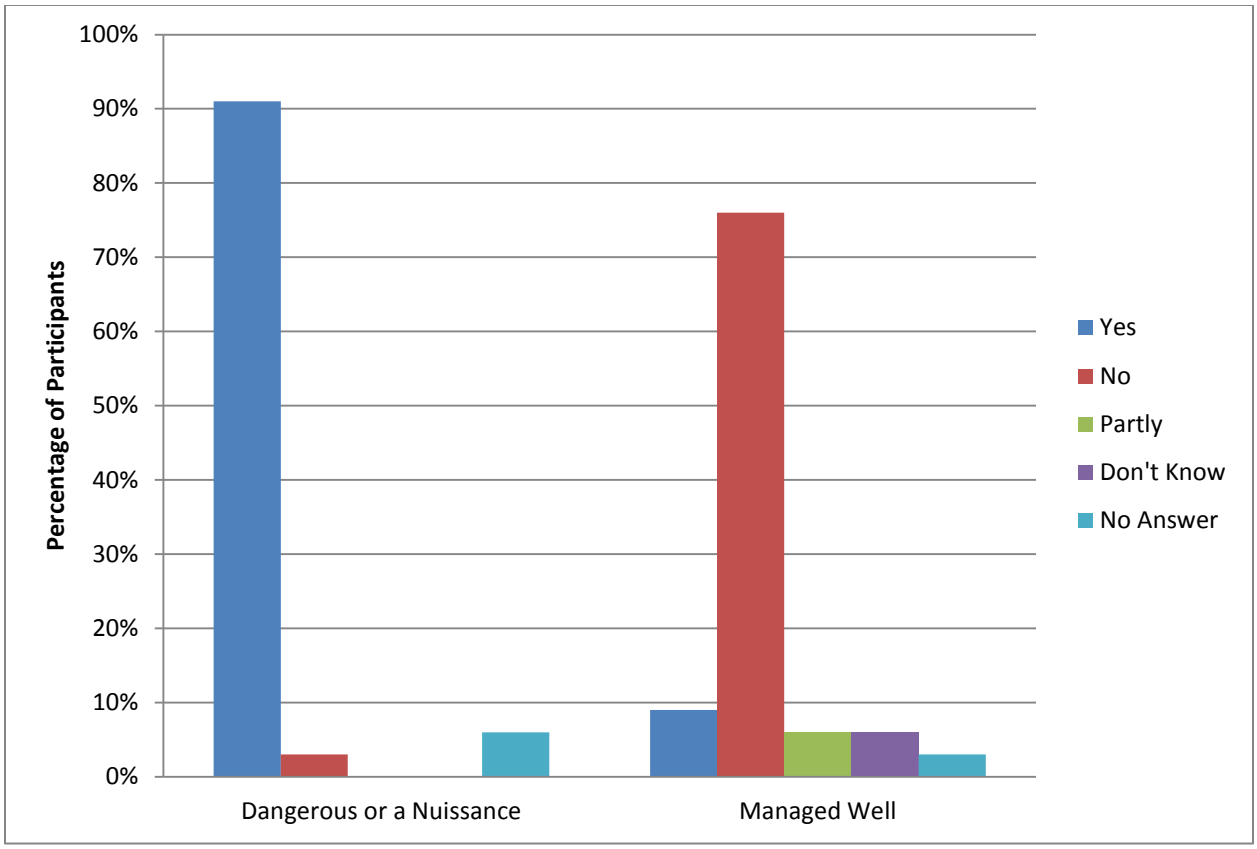

Figure 2.4. Tikirarjuaq and Igluligaarjuk opinions about polar bears.

When comments were analyzed in conjunction with the quantitative responses, participants indicated the specific problems were that more bears are coming around town or are coming in when the ice melts, destroying cabins, and eating a lot of bird eggs.

"Used to camp out a lot in the spring in tents. But don't really go camping so much anymore because of polar bears. Can't even stay in small cabins anymore because of fear… Never used to see polar bears in the community, but now come into the community all the time…Now the bears go inland, never used to go inland." –Mary Nangmalik through translation.

"Ya I think all the animals are managed fine. Except the polar bears, I think, 'cause we used to go camping everywhere we want to go, right now you have to bring a dog with you all the time to wake you up in the middle of the night. It's too dangerous, there are too many bears." – Mark Papak

Some participants also indicated that they are not happy about the process of polar bear management.

"The polar bears, they should leave them alone and give us the tags back. You've got government people that are sitting in the office doing paperwork where it is always flat and dry and easy, but when you get out of your office in the real world and live with what you've got, it is not the same. Like for example when polar bears come around, you can't shoot them, but when you're sitting in an office, you don't see that…locals take care of that themselves" – Anson Kigusiutnar

"The Churchill economy is driving polar bear management. It's all about the money, the bears are not disappearing… Bears have a mind of their own. If you tease them, they will come after you. If you try to drive him away, he will come back. Should kill them instead of playing with them."- Lewis Voisey

"The question is who owns the bears? Nobody." –Jackie Napagok through translation.

"People from other countries are controlling the management of polar bears based on what they hear. People who have never seen a polar bear are trying to control them." -Joseph Issaluk through translation

The majority of participants who indicated that polar bears were not managed well either specifically indicated that polar bear quotas should be increased or the quotas should be removed (Figure 2.5).

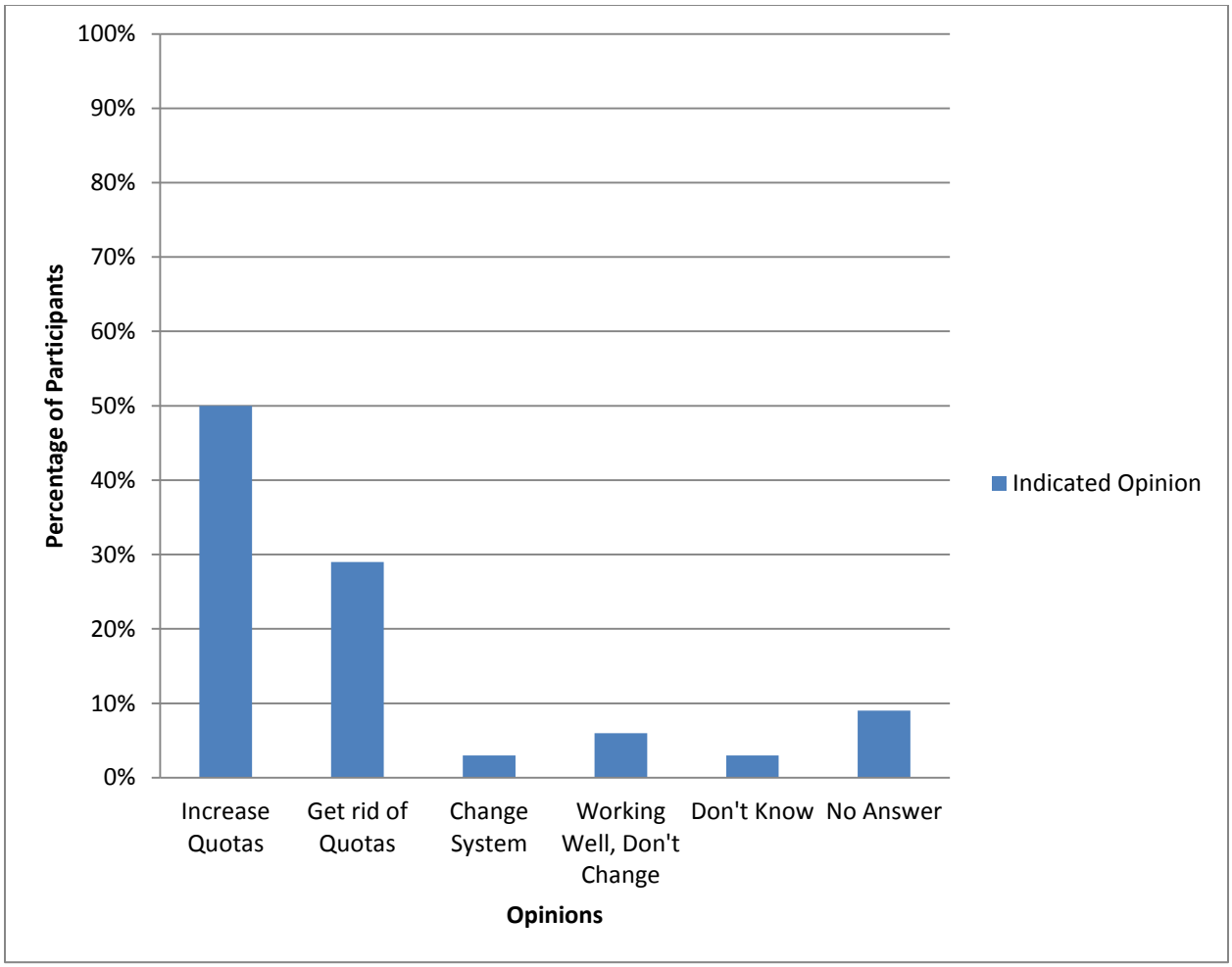

Figure 2.5. Tikirarjuaq and Igluligaarjuk opinions about polar bear management.

A number of participants actually blamed the quotas for an overly high polar bear population.

"They should be able to get them at all of the seasons…should remove quota on polar bear…see more bears because of quotas."- Teresa Kukkiak through translation.

"The polar bear quota should be increased and Inuks do not waste the polar bear." –Participant 323013

"I believe polar bears and grizzly bears are increasing in number in this area…I believe the quota should be higher."-Harry Aggark

"The polar bears aren't (being managed well)…there's probably not too many, but just never seen this many growing up, and up until ten years ago they were a rare sight. Everyone knows there is a lot more than there used to be…we would never see two cubs with a mother, that's the

most common thing now, used to be only one…when they take our tags away the bears come into town. Example, when they took our quota away three years ago. They know when you can shoot them and when you can't…people just want to see the same numbers they've seen all their lives and those kind of numbers are probably seeing one bear every three or four months. But if they're seeing bears every week and that and people are telling them you can't hunt them…Inuit always police themselves eh, they depended on the land, and when something is getting to be too many and it could kill you, you wonder why you can't hunt it you know?...How come other communities like Coral and Sanikiluaq have larger quotas? This is the Western Hudson Bay. They say the most polar bears in the world are in Churchill. Those are our bears, why do we have the smallest quotas?" –Chris Jones

"Good to have quotas in some areas, but not all…they should increase quotas on polar bear in some areas…they should come here and bear watch for us, look at the number of animals…my cabin is always getting destroyed by polar bears…everywhere they're always saying that we're running out of polar bears, but we're the ones that are here and see it. We're the ones that have the sleepless nights and they're at home sitting coffee and trying to make all these stupid rules." - Barney Aggark

"Researchers are saying that polar bears are almost extinct, but I don't believe this…get rid of quotas, all used in defence kills…with quotas those who get a tag own an animal, but it shouldn't be like that, the whole community should share…Inuit lifestyle is not to follow quotas "- Leo Mimialik through translation

Again referring to Figure 2.5, there was also some support for polar bear quotas in a very small minority of participants. Two participants in Igluligaarjuk indicated that the system was working well and should not be changed, while one indicated that the quota should be increased but the quota system was good. Another participant in Igluligaarjuk indicated that the system should be changed and tags were distributed at the wrong time and not when most of the bears are in town. Three participants in Tikirarjuaq, all of whom indicated that the quota should be increased, said the quota system was a good system.

"Never used to be quotas and never used to be any bears around. When the quotas happened, more bears started coming around… The quota should be bigger, but not removed." –Lewis Voisey

"Quota is big enough for polar bears. Tags for bears are during the winter season, maybe out of sync…Season shouldn't close for spring when they are all there…bears come around in spring and summertime."- Participant 33007

Results from this section show that polar bear management is important to participants and there is much more dissatisfaction with polar bear management when compared to satisfaction expressed with management of other species. In addition, most participants either think that the polar bear population is fine or is too high and that polar bear quotas should be increased or even abolished. These findings are important because they show that dissatisfaction is mostly compartmentalized towards outcomes of polar bear management and does not necessarily apply to the wildlife co-management regime generally. These findings also indicate what Inuit would like to see happen with quotas in polar bear management.

2.3.1.2 Concerns about other animals

Although much of the discussion about wildlife management surrounded polar bears, there were also a number of other species for which participants expressed slightly more concern. For the most part, concern over these species was directly related to their population levels and not their management. This emphasizes the uniqueness of the polar bear situation because my results indicate that dissatisfaction over polar bears is directly related to their management and the size of polar bear quotas.

2.3.1.2.1 Caribou

A few participants in each community expressed concern about caribou, but more participants in Qamani'tuaq than the other communities indicated that the caribou population was too low or an increase would be desirable. This is likely because this community is inland and access to sea mammals is limited making caribou the most important food source. There is also ongoing mining and mining development in close proximity to Qamani'tuaq. Participants who indicated that there were changes in the caribou migration patterns or population often

attributed these changes to a changing climate or to caribou staying away from the settled areas and being displaced by planes, helicopters, and activities associated with mining and mining exploration. There was acknowledgement of the benefit of jobs and income that mining provides, but there was also concern about the impact that mining and mining exploration is having on the caribou and caribou hunting.

"Our culture is entirely dependent on caribou in this area… I am trying to think of a way to tell the Government of Nunavut that they cannot be too focused on money and development and keep pushing the resource companies to keep going. They're putting our whole lives, culture, and environment in danger… They don't really know what is going on and have a one track mind and that includes NTI… they need to realize that caribou is our money and economics too." - Hugh Ikoe

Overharvesting was not a widespread concern, and most of the concern about impacts on caribou was directed at mining development, but some participants voiced concern about hunters hunting of the front of the caribou herds even though the elders say not to. Hunting the front of a herd was said to potentially have the effect of changing migration patterns.

While there was some concern expressed about caribou populations, the majority of participants indicated that the caribou population is fine, should remain as it is, and that if caribou populations were perceived to be declining, this was because the animals were migrating to where the food was and using other areas.

"Caribou population is not shrinking but using other areas." Louis Autut through translation

"Animals are not declining, they are just going to different areas to find food." -Andrew Alikashuak through translation

"If I were to tell these biologists or whatever, if you do your reports, stay, do that report over one year and then you see that they migrate…They doing tests on what? one week?... they estimate their numbers from that." - Jayko Kimmaliardjuk

"Numbers of animals are not decreasing, they are just wandering, move around, travel." -Sam Arualak through translation

"Putting a quota on caribou would wreck a lot of people's lives in Baker Lake because it is the main food and there are no sea mammals." -Anson Kigusiutnar

"They're migratory, every five years we got lots of caribou, but then every few years we get no caribou…animals aren't declining." –Kevin Issaluk

"Caribou are constantly moving to where the food is. People who count them say they are decreasing, but they are not…People managing the caribou don't know anything about them." - Joseph Issaluk through translation

"Mining and barges are pushing animals away, not making them decline, but pushing them away."- Leo Mimialik through translation

Most of the concern expressed about caribou was related to population levels but some participants were also clearly worried about outside influences on caribou and caribou management.

2.3.1.2.2 Grizzly Bears

In all of the communities, there were a couple of participants who expressed concern about grizzly bears getting into meat caches and who indicated that grizzly bear populations were too high. This was articulated most often in Qamani'tuaq. Some participants hunted grizzly bears and most, who expressed concern, felt that if a grizzly bear became a problem it would be destroyed. These participants therefore felt OK with management as long as they could continue to hunt the bears and hunters are able to put down grizzlies, wolverines, or dangerous animals if they needed to.

"Sixty years ago there never used to be grizzly bear or muskox around, now they are all over. Probably two or three time as much as before." - Joe Mautaritnaaq

"Yes being managed well, as long as hunters are able to catch them."- Thomas Sevoga through translation describing grizzly bear management.

"Higher quotas, polar bear quotas, we need more…Grizzly bear, I don't think there is a quota for them, we can kill them if we need to." –Participant 33002 explaining why he does not feel constrained by grizzly bear management.

"They tend to smash up cottages out there…people have been charged and luckily they were able to put down the grizzlies who were charging with their gun." –Peter Owingayak

The above comments are important because they show that although grizzly bears like polar bears are a dangerous animal, there is much more satisfaction with grizzly bear management because there is an element of freedom and hunters can harvest grizzly bears when it is necessary to do so.

2.3.1.2.2 Other Animals

In addition to caribou and grizzly bear, some participants also expressed slightly more concern about five more species. There were a few participants in each community that expressed concern that the Muskox population was too high. Concerns surrounding the high muskox population included that they may be displacing caribou and there were more in coastal areas. In Igluligaarjuk and Tikirarjuaq, a couple of participants indicated that fox populations were too high because not many people hunt or trap them anymore. This was said to have potential consequences for ptarmigan and ducks whose eggs are being eaten by foxes. There was also some concern expressed about high populations of snow geese who are eating many berries and seals whose population was said to be too low in the area due to high traffic from barges carrying supplies for the mines.

Narwhal is another animal that is under quota. We did not directly ask about narwhal but five participants indicated that that the narwhal quota was constraining. This contrasts with negative attitudes towards polar bear quotas because just as many participants expressed support for the narwhal quota. In addition, most of the people who expressed a negative attitude towards the narwhal quota also indicated dissatisfaction towards wildlife management generally and therefore had a biased negative opinion towards management to begin with.

This discussion of concern expressed about animals other than polar bears highlights the result that the dissatisfaction expressed about polar bears and their management is directly related to polar bear management outcomes. The uniqueness of the polar bear situation is emphasized by the fact that the concern expressed in this section about other animals is for the most part directly related to population levels and not management. The example of attitudes towards narwhal quotas also likely means that simply applying a quota to an animal does not necessarily produce negative attitudes and that dissatisfaction with polar bear quotas arises because the quotas are felt to be constraining.

2.3.1.3 A Different Understanding of Wildlife Management

The dissatisfaction with management that has been documented in this research has been mostly compartmentalized towards polar bear management and, for the most part, does not apply to other species of wildlife or the system of wildlife co-management. By excluding the negatively polarized responses related to polar bear management and through an analysis of the comments made by participants about whether they thought various species of animal were managed successfully in conjunction with their quantitative responses, a different understanding of wildlife management shaped by an Inuit view of harvesting became apparent in some participants' responses. Based on comments made by participants, this Inuit view of harvesting considers Inuit to have control over harvesting, promotes freedom for Inuit to be able to hunt as is needed, and questions weather animals can actually be managed.

Eight participants or 16% of the overall sample which is up to half of the participants (depending on the species asked about) who did not initially respond quantitatively and specify whether they thought the various animals asked about in the interview were managed

successfully, indicated in the comments that they do not like regulations that control how much can be hunted, that hunters and local Inuit should be able to hunt as they need to, and that Inuit control harvesting. These participants were likely not thinking of wildlife management as it is thought of in the Western academic context. In fact, for many of these participants who did not respond, there seemed to be a general lack of knowledge about the formalized process of wildlife co-management, the NWMB, and quotas which were usually just attributed to the government in general. The participants who initially indicated dissatisfaction with management or that management was not applicable in the quantitative responses (up to 16% of participants depending on the species asked about) also expressed this attitude of negativity towards any management that interferes with Inuit harvesting in the comments section.

"They should not be restricted in what they can hunt. People will hunt no matter what, you can't stop them" –Winnie Ikinilik through translation.

"I don't think that there should be any regulation on hunting cause even though if they make regulation for hunting, I wouldn't agree with it and they wouldn't stop doing any hunting." John Nukik Sr. through translation.

"Some of the management from government is not very sensible." - Joe Mautaritnaaq

"Never seen any over harvesters here." -Kevin Issaluk

"Animals control themselves, not controlled by humans" –Participant 32007

"I don't really see them being managed but there is nothing restricting my hunting." –Bobby Joe Ulurksit describing wildlife management.

"The government doesn't know so they shouldn't try to manage the animals. It is better for the communities to ask the elders what they should do instead of making rules and regulations."- Andrew Alikashuak through translation

"Inuit culture would be destroyed."-Leo Mimialik explaining through translation what would happen if animals declined.

Even some participants who indicated satisfaction with management in the quantitative responses said in the comments that they considered local Inuit to be the ones who controlled harvesting (8 participants or 16% of the overall sample).

"Animals are managed well…we only harvest what we need." –Jacinthe Amorok.

"The HTO is working well to control harvesting" -Solomon Sr. Voisey

"The people who are managing should have more experience on the land." -Jackie Napagok through translation.

When all comments were analyzed, in total, an attitude that considers Inuit to control harvesting arose in 48% of participants. Excluding participants who expressed satisfaction with management but indicated that Inuit control harvesting, an attitude that expressed negativity towards wildlife management or that hunters and local Inuit should be able to hunt as they need to arose in 32% of participants. These attitudes are formed by a different understanding of management that is likely shaped by an Inuit view of harvesting. The emergence of this attitude in the comments helps to explain why so many participants may not have responded to the initial question, and some only indicated their thoughts in the comments. It also explains why some participants may have negative attitudes towards any wildlife management that is not felt to be locally controlled.

2.3.1.4 Demographic Trends

Applying the participants' demographic data to the above results gives insight into who is more likely to hold certain attitudes and why the positive or negative attitudes documented may have arisen.

Excluding responses related to polar bear management, if the participants who initially expressed dissatisfaction with management or that management was not applicable and those who did not respond but indicated in the comments that they do not like regulations that control how much can be hunted and that hunters and local Inuit should be able to hunt as they need to are grouped together (32% of the overall sample), two demographic trends emerge. Of these participants, 88% were over 60 years old compared to 52% in the overall sample and 63% had no formal education compared to 32% in the overall sample. Only 6% of these participants had secondary or higher education compared to 40% in the overall sample. The other demographic information such as sex or leadership was very mixed and represented the original sample quite well, so no trends could be distinguished. What can be determined is that more participants who were not supportive of wildlife management were over 60 years old with no formal education.

Once again excluding responses related to polar bear management, the distinguishable demographics of the combination of participants who thought animals were managed successfully and those who thought animals were managed partly successfully (46% of the overall sample) were nearly opposite to those who expressed dissatisfaction about management. Of these participants, 70% were under 60 years old compared to 52% in the overall sample and 52% had secondary or higher education compared to 40% in the overall sample. Only 13% of the participants who responded this way had no formal education compared to 32% in the overall sample. The majority of those participants who thought animals were managed successfully were therefore under 60 years old and had higher levels of formal education.

Specifically related to polar bear management, there was a demographic difference between participants who thought polar bear quotas should be removed as opposed to those who thought quotas should just be increased. Here, 90% of the participants who thought the quotas

should be removed completely were over 60 years old. This is in contrast to 31% of the participants who thought quotas should just be increased who were over 60 years old. In addition, 50% of the participants who thought the quotas should be removed completely had no formal education compared to 13% of the participants who thought quotas should just be increased. Conversely, 20% of the participants who thought the quotas should be removed completely had secondary or higher education compared to 56% of the participants who thought quotas should just be increased. Therefore, more participants over 60 years old with no formal education thought that polar bear quotas should be abolished rather than just increased.

Application of the demographic data to the results shows who is likely to hold an attitude of negativity or one of positivity about wildlife management. Participants over 60 years old with no formal education were more likely to be dissatisfied with wildlife management and participants under 60 years old with secondary or higher education were more likely to think animals are currently managed successfully. Similarly, people over 60 years old with no formal education were more likely to indicate that polar bear quotas should be removed completely while participants under 60 years old with secondary or higher education were more likely to indicate that quotas should just be increased. These results are important to understanding why some participants may hold a general attitude of negativity towards wildlife management. The results indicate that the concept of wildlife management and therefore the system of wildlife co-management makes more sense and is more acceptable to younger people educated by the Canadian academic system as opposed to those who may have been educated on the land. Finding ways to include people in decision-making who may not have an understanding of the system of wildlife co-management will therefore be important to creating management that is acceptable to these people.

2.3.2 Reliability of Information about Animals

To understand what sources of information about animals Inuit in the Kivalliq Region trust, participants were asked which sources of information were most reliable regarding information about animals and animal numbers. Elders, personal experience, other hunters both from the community or other communities, and the local Hunters and Trappers Organization (HTO) were indicated to be the most reliable (Figure 2.6). Information from international organizations and governments, newspaper articles, environmental organizations, the Federal Government, wildlife biologists, and the Government of Nunavut was viewed as much less reliable. It is interesting to note that participants trusted information from conservation officers more than the Territorial Government. Although the conservation officers work for the Government of Nunavut, this difference is likely because the conservation officers live in the communities and are seen out on the land interacting with people and wildlife. When communities were analyzed individually, they all displayed this trend.

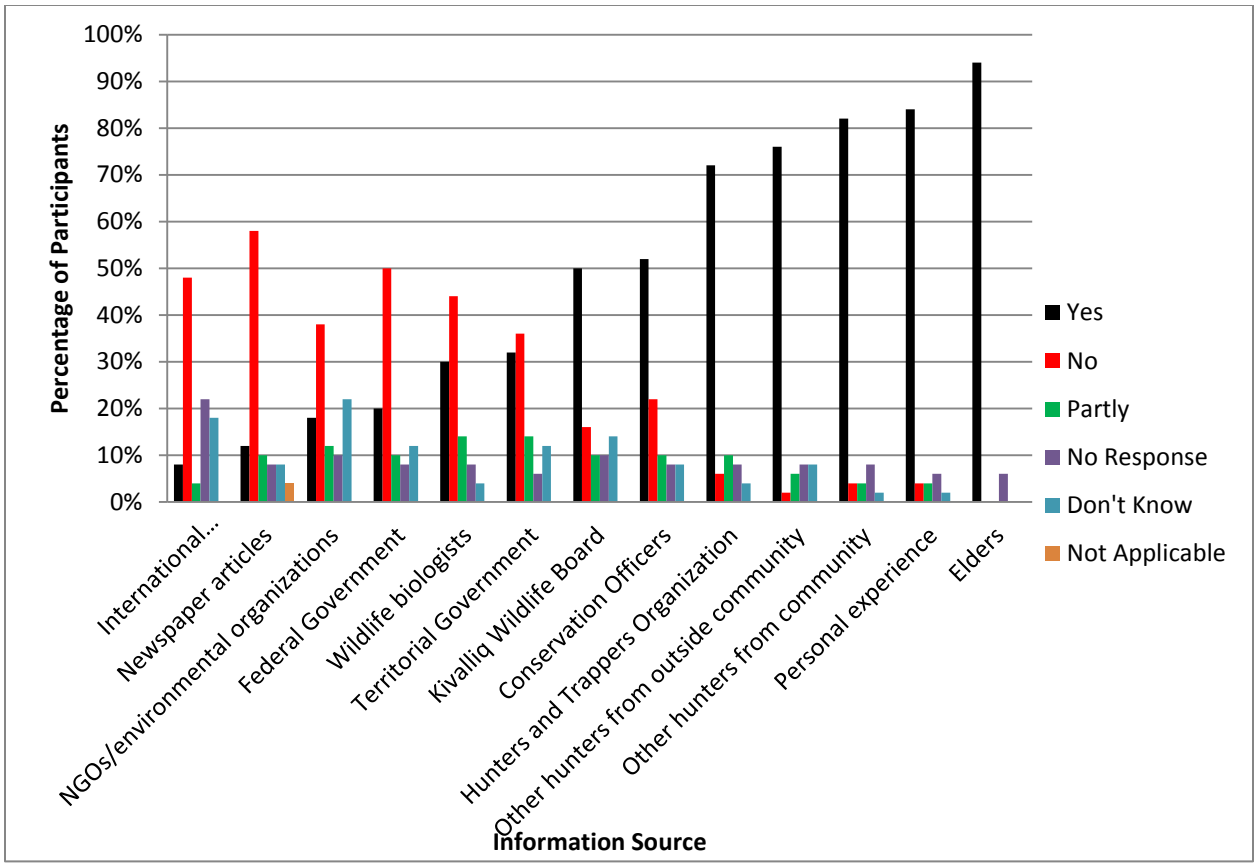

Figure 2.6. Igluligaarjuk, Qamani'tuaq, and Tikirarjuaq trust in information about animals and animal numbers.

Participant comments help to illustrate these trends.

“Elders know when the herd is going to be around, I can’t say about the other ones because I don’t know how they count them (the animals).” -Thomas Qaqimat through translation explain who he trusts regarding information about animals.

“People out observing wildlife.” –Louis Autut through translation explaining who he trusts regarding information about animals.

“They are only counting by writing and not actual experience”. -Joseph Issaluk through translation explaining why he does not find governments’, environmental organizations’, and scientist’s population estimates of animals reliable.

“They only make a triangle where they count the caribou. They don’t look further out. They only see under that little area and that is what they see of the populations…radio collars are not good for the animals.” -Andrew Alikashuak through translation explaining why he does not find information from biologists about animals reliable.

"I rely on my old man's words instead (of scientists and papers)… other hunters too." –Jayko Kimmaliardjuk explaining about who he trusts regarding information about animals.

"Scientists don't spend enough time in the North to do their research." –Participant 32009

"I agree with people who are out on the land hunting… biologists just look at a little bit of the herd." -John Nukik Sr. through translation

"Most of them we don't really agree with. We understand what they are trying to do, but it affects us so much that they don't realize." –Chris Jones speaking about environmental and international organizations.

"Never really talked with them. They never say anything so they are not reliable. If they say something then that is reliable, if they help" -Kevin Issaluk talking about the reliability of information about animals from wildlife biologists and environmental organizations.

"We don't get information from governments about animals" –Mark Papak

These results indicate that people who have contact with animals and who communicate with local people are viewed by participants as reliable sources of information about animals. This is important for implementation of wildlife co-management decisions because institutions and people who do not conform to these indicators of reliability are unlikely to be considered reliable sources of information about animals. Wildlife management decisions made by unreliable sources are therefore unlikely to be viewed as legitimate and may not be complied with.

2.3.3 Trust in Governing Institutions

To better understand trust in governing institutions, participants were asked to indicate their level of trust in a list of institutions relevant to their community and Nunavut (Figure 2.7). Level of trust was determined based on a scale of 1-7 where 1 meant very low trust and 7 meant very high trust. Participants who were not able to, or did not want to base their trust on a scale of 1-7 instead indicated that they did not, did, or partly trusted the institutions. 30% of participants responded this way. To facilitate comparison, numerical responses were broken up into the

following categories: numbers 1-3 were assigned to the category Low to No Trust, 4 was assigned to the category Middle/Partial Trust, and 5-7 were assigned to the category Moderate to Complete Trust. Non responses were broken up into categories of Don't Know and No Response.

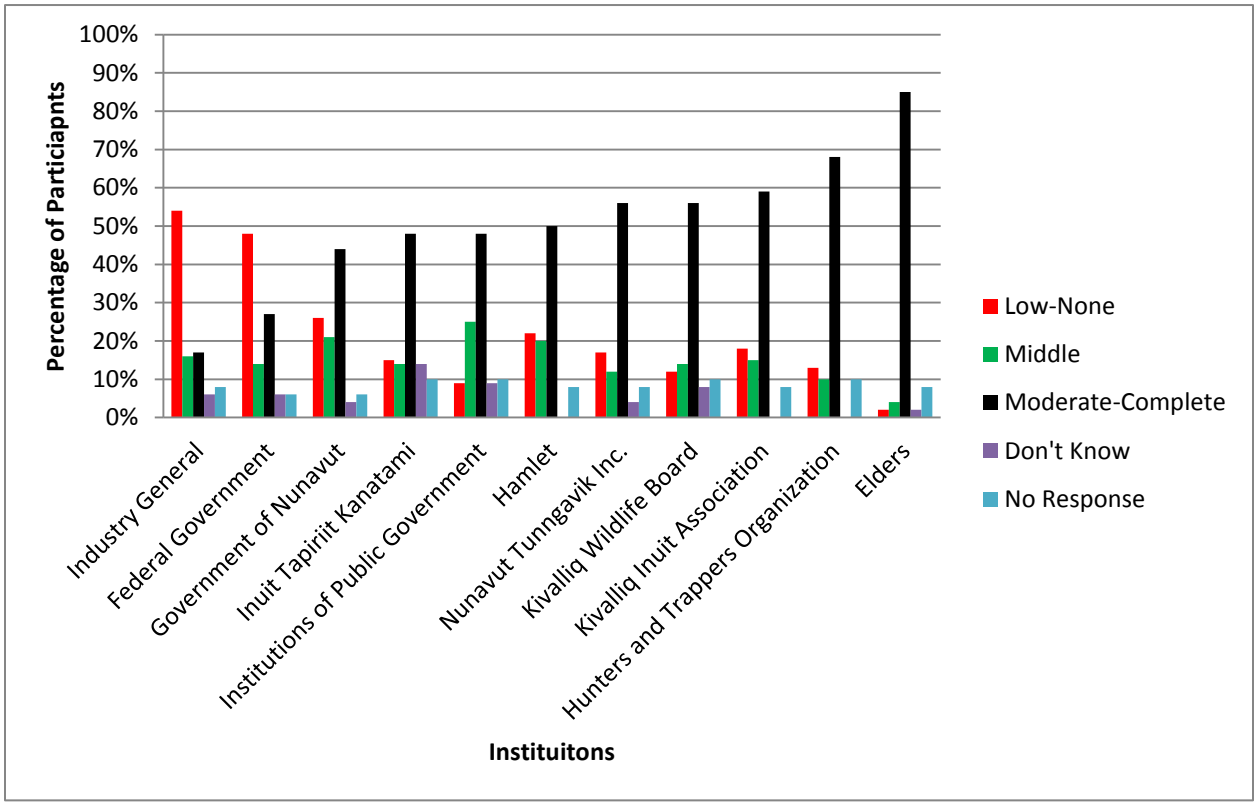

Figure 2.7. Igluligaarjuk, Qamani'tuaq, and Tikirarjuaq trust in governing institutions.

Results indicate that trust is significantly lower towards Industry and the Federal Government while being highest towards Elders and the HTO. Other institutions located in the middle of the spectrum have more comparable levels of trust. Some participants acknowledged the benefits of income and jobs that mining brings, but the majority of participants did not trust industry. When analyzed individually, all of the communities also followed this trend where

Industry and the Federal Government were always the least trusted and Elders and the HTO the most trusted.

2.3.3.1 Trust in Levels of Governance

To test the extent of trust towards different levels of governance, results were analyzed with the institutions broken down into categories of National including the Federal Government and Inuit Tapiriit Kanatami; Territorial including the Government of Nunavut, Nunavut Tunngavik Inc., and Institutions of Public Government; Regional including the Kivalliq Inuit Association (KIA) and Kivalliq Wildlife Board (KWB); Community including the HTO, Hamlet Council, and Elders (Figure 2.8). Industry was not included in the analysis.

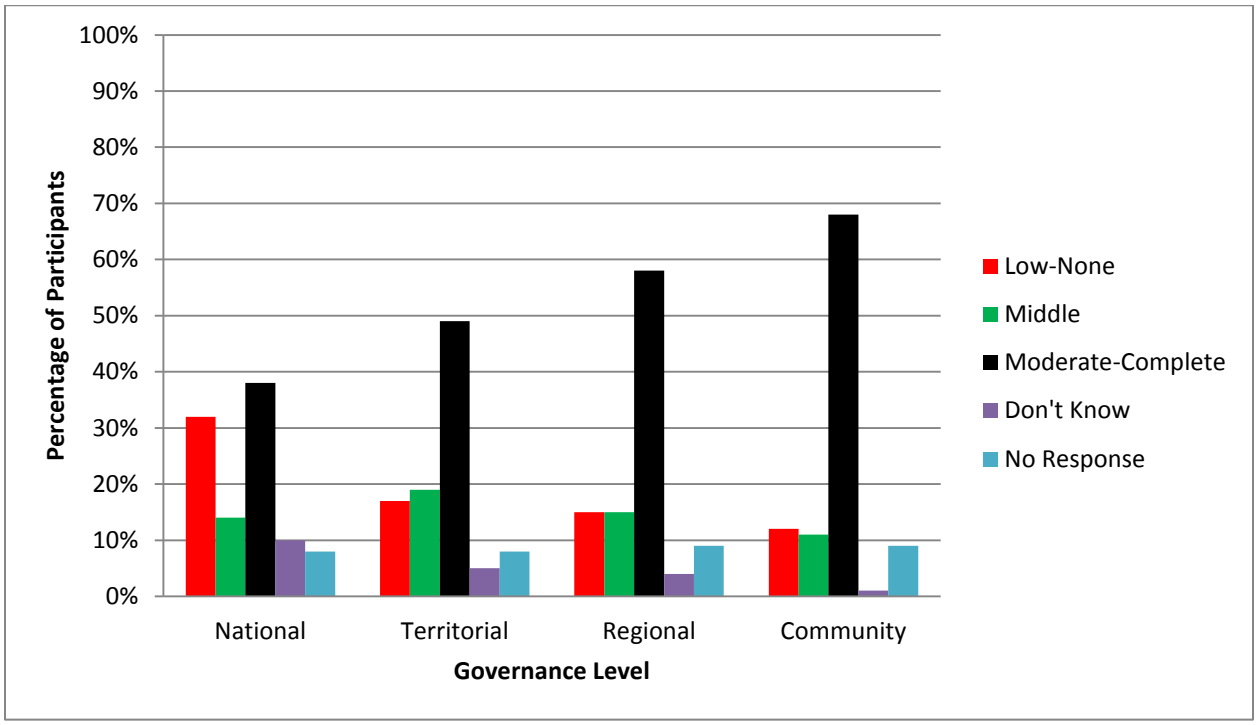

Figure 2.8. Igluligaarjuk, Qamani'tuaq, and Tikirarjuaq trust in levels of governance.

On the continuum from National to Community level governance, all of the communities expressed lower trust in non-local governance and higher trust in more localized governance. Comments from participants help to illustrate this.

"They don't see us and we don't see them…they are important because they are close to us. We know where they are and we know who they are." –Charles Issaluk explaining why he does not trust the Federal Government and why the HTO and Hamlet are important.

"They speak for the people and speak to the people, give information to the people, talk to researchers and other people coming to the community" -Participant 33007 explaining why the HTO and Hamlet are important.

"The town people are the most important" -Casimir Kriterdluk

"We have to share MLAs with other communities who don't represent our interests, so don't trust them." -Leo Mimialik through translation explaining his level of trust in the Government of Nunavut.

"They used to say that they would help with mining, but they don't give information to the people about mining or polar bear quotas or fish plant" -Participant 323007 explaining why they do not trust the Government of Nunavut.

"Cause we can get together and talk with them" –Leah Pupik explaining why she trusts the HTO and Hamlet.

"I know them more than others"- Jayko Kimmaliardjuk explaining why he trusts the Kivalliq Wildlife Board and Elders.

"They have more to do with the community than other organizations." Participant 32009 explaining why Elders, HTO, and Hamlet are the most important institutions to the community.

Although trust in Regional and Territorial institutions was not low, Community institutions were viewed as more trustworthy than non-local institutions. This is important to co-management implementation because it means that non-local influence is not likely to carry as much weight as local influence. Therefore the legitimacy of and therefore compliance with wildlife management decisions will be increased if they are supported or implemented by local institutions. Inclusion of local institutions in decision-making is therefore essential.

2.3.3.2 Trust in Inuit versus Non-Inuit Institutions

To determine if trust was higher towards what are viewed as Inuit institutions compared to non-Inuit institutions, the institutions were divided up into categories of Non-Inuit including the Federal Government, and the Government of Nunavut; Co-managed including the Institutions of Pubic Government; and Inuit including Inuit Tapiriit Kanatami, Nunavut Tunngavik Inc., the KWB, KIA, HTO, Hamlet Council, and Elders (Figure 2.9). Industry was not included in the analysis. Although the Inuit category includes a mixture of National, Territorial, Regional and Community institutions, there may be some bias because all of the community institutions which are more highly trusted than higher levels of governance are considered to be Inuit. Given this bias, the analysis could still provide some insight into what determines trust in an institution.

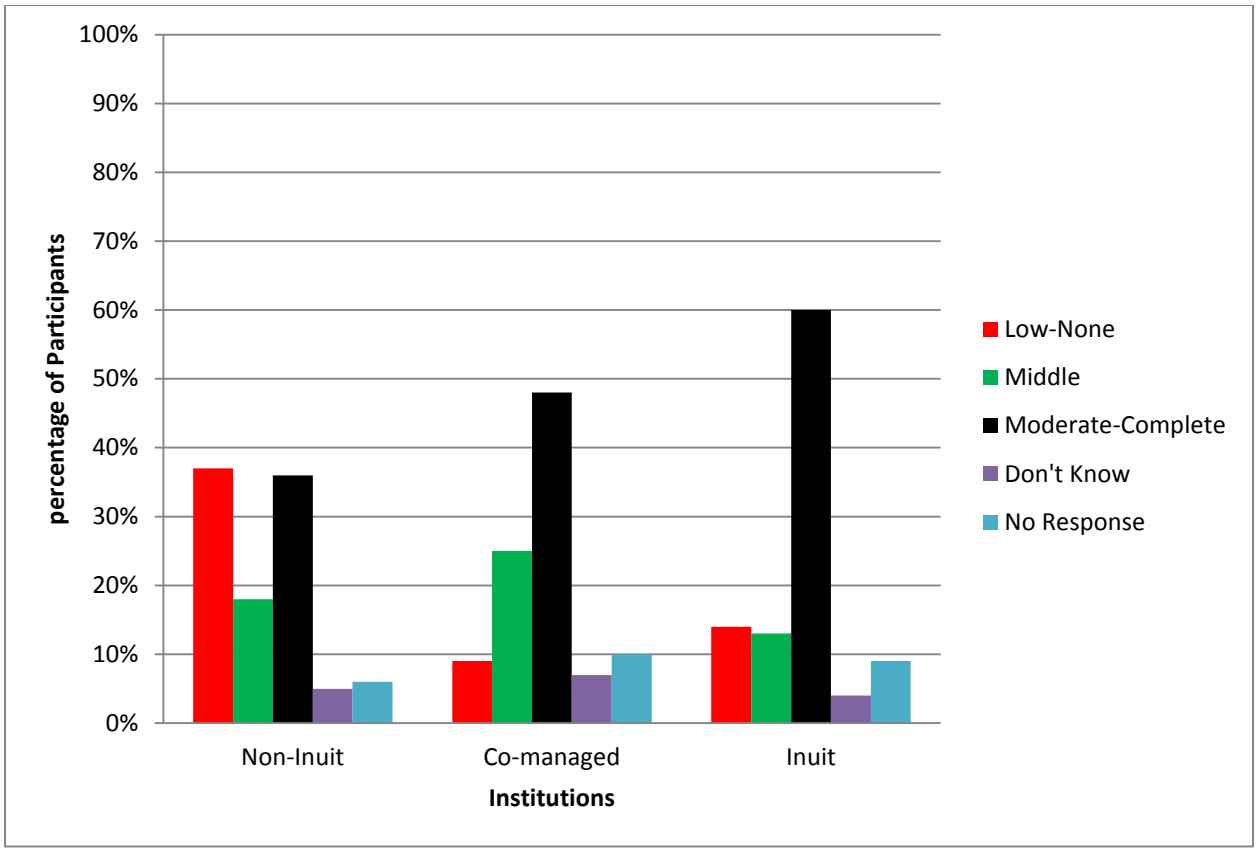

Figure 2.9. Igluligaarjuk, Qamani'tuaq, and Tikirarjuaq trust in Inuit versus non-Inuit Institutions.

Although there may be some bias, the results indicate that trust is lower towards Non-Inuit institutions than it is towards what are viewed as Inuit institutions. Co-managed institutions are located in the middle of the trust spectrum closer to levels of trust towards Inuit institutions.

"I trust them cause I know them and they are Inuit just like me" –Barney Aggark explaining why he trusts leaders in Nunavut.

"We vote for the people we know". –Tim Angotingoar explaining the reason why KIA is important.

"They show what Inuit culture is all about and give Inuit a voice internationally"-Leo Mimialik through translation explaining the importance of Inuit Tapiriit Kanatami.

"Cause they're strictly for Inuit organizations." –Harry Aggark explaining why Government of Nunavut and NTI are important.

Since institutions that are viewed as Inuit institutions or have Inuit influence are regarded as more trustworthy than non-Inuit institutions, decisions made by Inuit institutions or co-managed institutions are likely to be more highly respected.

2.3.3.3 Most Important Institutions

When participants were asked which institutions were the most important, the Hamlet, HTO, and Elders were identified the most number of times as being the most important institutions to the community (Figure 2.10). Nunavut Tunngavik Inc., the Government of Nunavut, and the Kivalliq Inuit Association were also identified as the most important institutions more than other institutions. Various other institutions not included in the interview guide were also mentioned. Two of the three people who specified Institutions of Public Government as the most important, specifically mentioned the Nunavut Wildlife Management Board.

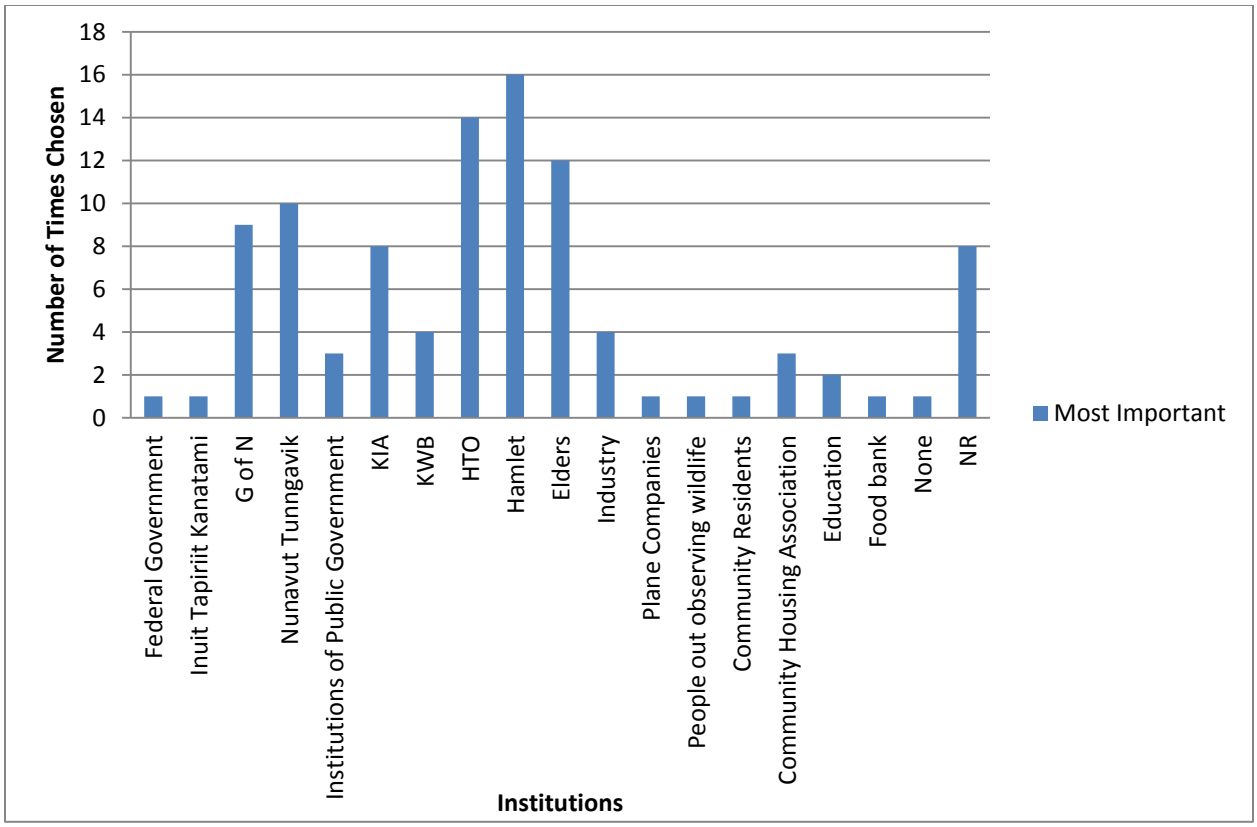

Figure 2.10. The most important institutions to Igluligaarjuk, Qamani'tuaq, and Tikirarjuaq.

"They speak for us and benefit us, and other people give information to them and they can speak to the government. They are our in between people to the government of Nunavut." –Jacinthe Amorok explaining why NTI and KIA are important.

"They are helping Inuit in Nunavut" Mark Papak explaining why KIA and NTI are the most important institutions to the community.

Here, local and Inuit institutions were also viewed as the institutions that are the most important to the community. This helps to explain why these institutions may be considered more trustworthy and why decisions made by these institutions are more likely to be respected.

2.4 Discussion

Is Inuit dissatisfaction with wildlife management in the Kivalliq region of Nunavut an outcome of the process of co-management implementation or directly related to conflicts in polar bear management? Although there was a diversity of responses recorded, there were three important trends that emerged in all of the communities: clear dissatisfaction with polar bear management outcomes in contrast to a general satisfaction with or indifference to the management of other species asked about, local governing institutions were more highly trusted and regarded to be the most important, and people and institutions who were in contact with animals and local people were viewed as more reliable sources of information about animals. I believe the most significant of these trends is the negativity expressed towards and emphasis placed on polar bear management by participants. As such, this will be the main focus of the discussion. I will first compare the important trends noted in this research with what others have found, then offer an interpretation of what the results mean that has been determined in consultation with the HTOs of participating communities.

2.4.1 Polar Bears: Opinions and Status

A declining trend in the Western Hudson Bay (WH) polar bear subpopulation has been documented by scientists. Studies based on mark and recapture methods indicate that the subpopulation which was previously stable (Derocher & Stirling, 1995) declined over the period from 1984-2004 (Regehr et al., 2007). The documented decline in polar bear reproductive output, condition (Stirling et al., 1999), and therefore survival (Regehr et al., 2007) has been correlated to earlier ice break up caused by a warming climate (Stirling et al., 1999; Stirling & Parkinson, 2006; Regehr et al., 2007; Amstrup et al., 2008). The authors suggest that a longer

ice-free season causes polar bears to spend more time on land and that they become nutritionally stressed without access to seals, their main food source. It is explained that this may be a reason why there are higher incidences of bears close to communities searching for other food sources and therefore more bear-human conflicts. Based on the declining WH subpopulation trend documented from the period ending in 2004, Regehr et al., (2007) and Obbard et al. (2010) have predicted that if sea ice continues to break up earlier as is anticipated, litter sizes and therefore the WH subpopulation will continue to decline resulting in potential extirpaton from certain areas (Amstrup et al., 2008).

Results from my research indicate that Inuit in the Western Hudson Bay do not think the WH polar bear subpopulation has declined. In fact, many Inuit indicate that the bear population has increased. Similar to results obtained in this study, Kotierk (2012) found that the issue related to wildlife management that people in the Western Hudson Bay communities were most concerned about were the high number of polar bears and the need to increase or remove the quotas. In Kotierk's study, most respondents indicated there were the "most" polar bears currently and that "fewer" bears would be more desirable. Concern over human vulnerability and safety related to the high number of polar bears has also been reported in work by Tyrrell (2006) and is especially important with changing bear behaviour and more bear encounters. Nirlungayuk and Lee (2009) explain that Inuit have a different, longer term "geographic and temporal understanding" (p. 137) of polar bear populations which is not taken into account by the current management approach. In a description that is supported by Wenzel (2009), they recount that when compared to historic population levels from the period of 1900-1970, the 1970s when more bears began to be noticed, and the very small populations during the 1930s and 40s, the present population is higher than it ever was and is how Inuit understand polar bear

population dynamics. In addition, Akavak (2011) notes that there is an understanding by Inuit that the polar bear subpopulation boundaries do not confine bears who migrate between subpopulations. Therefore the accuracy of population estimates based on dividing bears up into subpopulations has been questioned (Stapleton et al., 2014).

The Total Allowable Harvest (TAH) levels for polar bear subpopulations in Nunavut are determined by the Nunavut Wildlife Management Board (NWMB) (subject to Minister approval) with guidance from a Memorandum of Understanding (MOU) signed by community Hunters and Trappers Organizations (HTOs) harvesting from the specific subpopulation, the Regional Wildlife Organization(s) (RWOs), and the Nunavut Department of Environment (DOE). Igluligaarjuk and Tikirarjuaq receive their allotted quotas from the TAH determined for the Western Hudson Bay (WH) subpopulation and Igluligaarjuk also receives a portion of their quota from the TAH determined for the Foxe Basin (FB) subpopulation. Although a new polar bear management plan is being developed, the MOU from 2005 detailing management for the WH subpopulation (Stapleton et al., 2014) as well as the FB subpopulation (GN, 2012) are still being followed.

The TAHs for polar bear subpopulations in Nunavut have been increased and reduced over time but the community HTOs have consistently continued to ask for larger TAHs. In addition, the RWOs as well as Nunavut Tunngavik Inc. have continued to write letters of support for larger TAHs. Reasons for the requested changes to the TAHs include increasing encounters with polar bears, strange polar bear behavior, property damage, and high numbers of defense kills despite restraint by community members (Akavak, 2011). Management of the WH polar bear subpopulation has therefore been controversial for a long time (Kotierk, 2012).

Recently conducted aerial surveys of the polar bear subpopulations along the West Coast of Hudson Bay have shed new light on what may be happening with the polar bear population dynamics there. Results from an aerial survey of the WH polar bear subpopulation conducted by Stapleton et al. (2014) during 2011 indicate that there may be more bears in the subpopulation area than previously thought based on estimated declines made from capture based studies conducted in 2004. Stapleton et al. describe how the vast majority of the research on the WH polar bear subpopulation has been based on mark-recapture work conducted in the area between Churchill and the Nelson River that has been used to represent the entire area. It is therefore suggested that the mark-recapture research has potentially underestimated the size of the subpopulation because of this "spatially limited sampling" (p. 45) concentrated around Churchill and Wapusk National Park. According to their aerial survey data, during late summer when the capture work has taken place, there are high concentrations of bears along the coast southeast of the sampling sites used by the capture-based studies. In addition, they note that Inuit have indicated that more bears are spending time during the ice free season in Nunavut. Aerial surveys of the Fox Basin subpopulation conducted in 2009 and 2010 have shown that it has also remained relatively stable (GN, 2012). Aerial survey techniques are therefore suggested by Stapleton et al. (2014) as a method that can provide comprehensive sampling of subpopulations and complement more traditional capture based methods. Another benefit of aerial surveys noted is that they are less invasive than capture based techniques and do not require handling of bears which is often an area of concern to Inuit.

2.4.2 Dissatisfaction with Polar Bear Management Outcomes versus Wildlife Co-management

The Total Allowable Harvest levels determined by the co-managed NWMB, subject to approval by the Government, and assigned to certain animals like polar bear are legally binding

for Inuit in Nunavut. In a system where Inuit are active subsistence harvesters and largely determine the success of management outcomes, however, enforcement of NWMB decisions by the Government of Nunavut can be difficult (Suluk & Blakney, 2008). Enforcement of controversial management decisions may actually be more damaging than beneficial to the wildlife co-management system due to the potential for increased resentment felt by Inuit. Implementation of NWMB decisions is therefore largely based on mutual trust between governing institutions and local people as well as respect for NWMB decisions and the co-management regime.

Authors have expressed concern that wildlife management decision-making and decisions not supported by the Nunavut populace may limit acceptance of and cooperation with those decisions. For example, decision-making based solely on biological science that does not include Inuit resource users, constricting quotas, reduced local economic gain and control related to harvesting, or international agreements that do not align with local objectives may result in dissatisfaction leading to confusion, resentment, and mistrust towards the wildlife co-management system (Mallory et al., 2006; Tyrrell, 2007; Clark et al., 2008; Clark et al., 2009; Dowsley, 2009a; Kunuk & Mauro, 2010). Such a result has the potential to severely limit effective implementation of wildlife co-management.

A finding that is novel to my research in the Kivalliq Region of Nunavut, has been validated by participating communities, and is what I believe to be the most important outcome of this research is that except for polar bear management, people in Qamani'tuaq, Igluligaarjuk, and Tikirarjuaq were dominantly content with wildlife co-management. The results indicate that for the most part, attitudes towards the management of all species were similar and more positive except for high rates of dissatisfaction expressed towards polar bear management. In other

words, in Tikirarjauq and Igluligaarjuk, resentment and mistrust is compartmentalized towards polar bear management and does not necessarily apply to the entire wildlife co-management decision-making system generally. This result is reinforced by results from Qamani'tuaq which is inland and where concern about polar bear management was not as high. In Qamani'tuaq, attitudes towards the management of all of the other species were still very comparable and management was regarded more favorably than unfavorably.

Results from my research also indicate that dissatisfaction with polar bear management is more closely related to the fact that people are not satisfied with polar bear management outcomes than it is to dissatisfaction with the decision-making process. This is a marked contrast to authors including Clark et al., (2009) who have predicted that conflicts specific to polar bear management could lead to regulations being ignored or even defied and endanger the entire system of wildlife co-management. Nirlungayuk and Lee (2009) have also indicated that if the process of co-management process is to advance, Inuit perspectives on polar bears need to be recognized. While this may be a good recommendation specifically for polar bear management, dissatisfaction with polar bear management outcomes may not put the entire co-management regime in danger.

The majority of research participants in Igluligaarjuk and Tikirarjuaq indicated that the polar bear quotas should be increased as opposed to abolished. This supports the finding that dissatisfaction with polar bear management is likely more related to dissatisfaction with management outcomes as opposed to dissatisfaction with the decision-making process. Although there are some issues related to quotas (discussed below), the concept of quotas and the process of deciding on a TAH and allocating quotas may not cause as much of a problem as the size of the quotas that are allocated. Polar bears are not the only animal under quota and there is

documented support for quotas on animals in certain instances. For example, according to documents on the NWMB (n.d.) website, in 2012, a quota was imposed on the Southampton Island caribou population to let the population regenerate. In this case, it was on the initiative of the Aiviit HTO in Coral Harbour who wrote a letter to the Government of Nunavut, Minister of the Environment who contacted the NWMB and in the end made an interim decision supported by the NWMB to impose a TAH on the Southampton Island Caribou population. Both scientific evidence and observations of hunters were said to be in agreement and the quota is still being implemented. In addition, although a few study participants in this research indicated that that the narwhal quota was constraining, just as many expressed support for the narwhal quota. Therefore, what may be more important as a factor in contributing to dissatisfaction with management than the concept of quotas, is overly constraining quotas when co-existing with dangerous large carnivores. This is exemplified by attitudes towards grizzly bear management expressed by participants in this study where it was indicated that people were satisfied with management as long as they were able to kill a problem bear if needed.

2.4.3 Negative Attitudes and Co-management

Although, excluding polar bear management, the majority of participants indicated a general satisfaction with or indifference to the management of animals, some negative attitudes towards wildlife management were expressed. The majority of participants also indicated that polar bear quotas should be increased as opposed to abolished, but Figure 2.5 shows that nearly 30% of the participants in Igluligaarjuk and Tikirarjuaq thought quotas should be abolished completely. Just as was the case with the participants who demonstrated negative attitudes towards any management that restricts Inuit hunting or is not controlled by Inuit, the majority of people who wanted quotas abolished were over 60 with no formal education. This finding does

not mean that the opinions of older people with no formal education are not valid but perhaps just that the co-managed quota system makes more sense and is more acceptable to those educated by the Canadian academic system as opposed to those who may have been educated on the land. Increased emphasis on decision-making processes that include Inuit who may not have an understanding of the system of wildlife co-management or have negative attitudes towards management in general will therefore be important to generating their support for co-management.

More emphasis on decision-making that includes local institutions that are more highly trusted by Inuit who may have negative attitudes towards wildlife co-management will also likely result in greater support for wildlife co-management as well as decisions resulting from co-management. My results indicate that although trust in most regional and territorial governing institutions was not low, local institutions were more highly trusted than non-local institutions because, as participants indicated, local institutions are the institutions close to the communities, that communicate with people, and are concerned with the communities' interests. This result is similar to results from Kotierk's (2012) public opinion survey conducted in the Kivalliq Region where local institutions and people were more highly trusted than higher level institutions or outside influences. In my research, local institutions were also viewed as the most important and as more reliable sources of information about animals. In addition, institutions that are viewed as Inuit institutions or that have Inuit influence, like co-managed Institutions of Public Government, were regarded as more trustworthy than non-Inuit institutions. Therefore although trust in regional and territorial institutions was not low, trust in local Inuit institutions was higher and non-local influence is not likely to carry as much weight as local influence for some participants. Consequently, greater inclusion of local institutions in wildlife management decision-making

and generating support for decisions by local institutions is likely important to increasing acceptance of wildlife management decisions by Inuit who may have negative attitudes towards wildlife co-management and to building trust in the institution of co-management.

Dissatisfaction with the concept of quotas demonstrated primarily by some of the older people in this study is likely related to feelings of loss of control in harvesting. Dowsley (2009b) identifies a number of concerns regarding quotas in Nunavut similar to what was described by participants in this study. Polar bears are often treated with great respect, so quotas and hunting for sport may be considered unethical and disrespectful to the bear and are believed to run the risk of angering the bear so that it leaves or attacks. Quotas also cause polar bears to be privatized or assigned to the person who gets the tag and therefore may restrict others from hunting. Although communities have various ways of sharing harvested animals and profits, it disrupts a system where a communal resource was hunted based on need, or when bears presented themselves. One research participant indicated that more bears may actually be killed because of quotas. This could happen because when there is a quota, people may take bears whenever they get the chance until the quota is used up instead of taking bears only at optimal times and in optimal conditions when there is no quota.

Some participants in this study who expressed an attitude of negativity towards quotas voiced concerns about polar bears killed in defense being counted as part of their allotted quota. Defence kills that count as part of the quota are an issue with an increase in polar bear-human conflicts (Clark et al., 2013). Similarly, Clark and Slocombe (2011) report that previously when there were quotas on grizzly bear around Qamani'tuaq, Nunavut, there were concerns about the requirement of bears that were killed because they are causing problems to be counted as part of set quotas. They explain that this reduced the number of bears communities could hunt for

subsistence purposes and was especially concerning due to increased grizzly bear-human conflicts. Furthermore, the polar bear TAH is reduced the next year if a community exceeds their TAH the previous year because of animals killed in defense (GN, 2005). This further limits the subsistence harvest the following year.

2.5 Conclusion

Based on this study, the issue of wildlife co-management most controversial and important to the people in Igluligaarjuk and Tikirarjuaq, Nunavut is polar bear management. The main contributing factor to the dissatisfaction with polar bear management can be narrowed down to the fact that the polar bear TAH and therefore community quotas are simply viewed as too low for the current polar bear population. The research participants see these quotas as constraining them from shooting bears in potentially hazardous situations, endangering community members.

While the resentment felt because of what are viewed as constraining polar bear quotas is very real, this research indicates that it is directed at polar bear management and does not necessarily apply to the entire wildlife co-management system. Potential consequences of this resentment specifically to polar bear management are also very real. For example, in response to a proposed reduction of the polar bear TAH in Baffin Bay in 2009, Inuit and the HTOs from the area indicated that if the TAH was imposed, they would continue to hunt as they pleased (George, 2009). In George's Nunatsiaq News article (2009), representatives of Baffin HTOs are recorded as saying "if it's lower, we'll hunt what we want", and "those are our bears and we can hunt the way we want". Although the polar bear TAH and co-managed quota system has been strictly adhered to by Inuit (Akavak, 2011), similar sentiments were disclosed to me during

interviews. George's article also describes how Inuit hunters feel they should not be penalized for climate change when they are not major contributors and people are actually seeing more healthy bears. This is important because much of the recent controversy surrounding polar bears has focused on harvesting and management of harvesting that does not address their primary threat: climate change (Clark et al., 2013; Tyrrell & Clark, 2014).

The wildlife co-management arrangement in Nunavut has the potential to contribute to polar bear management decisions that are representative of local interests and more acceptable to all stakeholders. Co-management is not just an attempt at co-optation of Inuit into a bureaucratic relationship with the government (Rodon, 1998), but should be an inclusive process of governance, is unique to every agreement, and is shaped by each group of people involved. Although subject to colonialism described as a "relationship of disempowerment" by Campbell (2013, p. 34), since sovereignty over what is now Nunavut was asserted by England and later on when Inuit became "Canadians all of a sudden one day" (Kusugak, 2013, p. 15), over time, working with other Canadians and through the signing of the NLCA, Inuit have asserted their claim to land and a way of life. Inuit are patriotic Canadians, and want to be part of and contributing members of Canadian society who are appreciated and respected (Kusugak, 2013). According to Campbell (2013), while much remains to be done in regards to full implementation of the NLCA and in addressing various social, economic, and health concerns not to mention environmental concerns, through work on the NLCA, "the basis for a more cooperative future has been laid and the challenge for the future is to build on it" (p. 40). My results indicate that although the Nunavut wildlife co-management system is still working its way to more inclusive implementation, besides the size of the polar bear TAHs, Inuit in Qamani'tuaq, Tikirarjuaq and Igluligaarjuk are dominantly content with how wildlife co-management is functioning.

As a new polar bear management plans are designed, time will tell if the new plan will be informed by frequent, close work with local Inuit hunters, community groups, and scientists and provide a comprehensive picture of the polar bear subpopulations along the western Hudson Bay that acknowledges Inuit perspectives of polar bears. During a time of changing social and ecological Arctic conditions, "decisions must reflect reality, not be imposed on it" (Brody, 2001, p. 244) and such a plan would help the NWMB and Government of Nunavut make informed management decisions that are more acceptable to all those involved with the decision-making process.

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CHAPTER 3: RECOMMENDATIONS AND REFLECTIONS

3.1 Other Issues in Co-management Implementation and Recommendations

3.1.1 Issues

Currently, the most important problem of wildlife management to Inuit living in the Kivalliq Region on the Western Hudson Bay is the size of polar bear TAHs that are simply viewed as too small for the current bear population. This should not be misinterpreted as an indication that everything else within the system is perfect. Although dissatisfaction with management is generally compartmentalized towards outcomes of polar bear management, there are still issues related to wildlife co-management decision-making and implementation.

The first and foremost issue related to effective co-management implementation may be the misunderstanding caused by the discrepancy between *IQ* and biologically based wildlife management. This may also be the root cause of the mistrust and negativity expressed towards wildlife management or anything that interferes with Inuit harvesting by up to 32% of participants in this study (the majority of which were older people with no formal education). Not only is the mistrust and negativity expressed a strong indication that *IQ* may not carry as much weight within the system but it indicates that the process of wildlife co-management may not be completely acceptable to an Inuit view of harvesting and is more acceptable to those educated by the Canadian academic system as opposed to those who have been educated on the land. Trust in and an understanding of wildlife management as is understood in a Euro-Canadian context and the co-management system may therefore be increasing as more Inuit are educated within the Canadian academic system and there are fewer Inuit educated purely on the land. This, however, does not mean that the discrepancy between *IQ* and the process of biologically based wildlife management should be ignored.

Another issue that points to disconnect between local people and the decision-making institutions in wildlife co-management is higher levels of trust in local over regional, territorial, and federal institutions documented in this research. This is an indication that Inuit living in the three participating communities do not feel that higher level institutions are close to the communities, adequately communicate with people, or are concerned with the communities' interests. For example, another species specific issue that may be developing in the Kivalliq Region and was identified by participants in this study is Inuit concern about the effects of mining exploration, mining, municipal development, and climate change on caribou. Although a few participants in each community communicated concern about caribou (which has been documented to be the dominant food source in all of the Kivalliq communities (Campbell, 2007)) and caribou populations, there was also apprehension expressed by some of these participants about the potential for government enforced management or non-local management initiatives. The caribou issue is equally complicated to the polar bear issue and the ranges of various caribou herds are still poorly understood by scientists, are shifting, and are therefore identified by Campbell (2007) as something that needs to be better understood to avoid future conflicts in the growing natural resource based economy. Furthermore Giroux et al. (2012) explain that in most areas in Nunavut, harvest of caribou is not restricted through legislation and reporting of that harvest is not required unless there is a conservation issue. Therefore, the need for higher level institutions to work with Inuit to manage caribou as social and ecological conditions change will be important.

3.1.2 Recommendations

Animals, use of animals, and the health of animal populations is important to Inuit and central to a healthy Inuit culture. What can be done to avoid more wildlife management decisions

like the polar bear TAHs that are felt to be constraining by Inuit and are causing anger and dissatisfaction in the communities of Igluligaarjuk and Tikirarjuaq? Part of a potential solution to the current polar bear TAH conflict would be for the NWMB and Government of Nunavut to listen to the HTOs, RWOs, and local people and come to compromises on the TAHs that are acceptable to all parties. Although results from this study indicate that, except for polar bear management outcomes, there was general satisfaction with or indifference to wildlife management of other species, here I will outline some recommendations both specific to polar bear management and for the successful implementation of wildlife co-management in Nunavut more generally. These recommendations may help to avoid future conflicts or at least address them more quickly and efficiently when they arise. Many of the suggestions have been identified previously by other authors, but they are still relevant today as the Nunavut co-management regime continues to adapt and evolve.

3.1.2.1 Communication

My results indicate that there is disconnect between the formalized process of wildlife co-management and some Inuit (the majority of who are over 60 years old with no formal education) in the three participating communities. Although not many participants initially expressed dissatisfaction with wildlife management in answers to the quantitative questions, nearly half of the participants who did not respond expressed dissatisfaction with and demonstrated a general lack of understanding of the formalized process of wildlife co-management in the comments. This is similar to what Kotierk (2012) found in a public opinion survey conducted in the Kivalliq Region. He found that some participants did not know about the performance of bureaucrats in wildlife management and did not think the Nunavut Department of Environment had a fair decision-making process or responded to concerns well. If

misunderstanding is going to result in dissatisfaction and higher levels of mistrust, Kotierk (2012) suggests that more effort needs to be exerted by the Government of Nunavut to explain to the public more clearly how decision making works and how input and concerns are addressed. Tyrrell (2007) indicates that Inuit have made great efforts to incorporate western structure and concepts of wildlife management into governance, and recommends that now it is time for managers to meet them on common ground. Tester & Irniq (2008) also recommend that if Inuit and non-Inuit are going to work together on various problems, "more effort needs to be put towards the design of social processes and social spaces" (p. 59) that result in more frequent communication and stronger relationships. This would be instrumental in helping "Western scientists and Inuit understand each other's historical, cultural, and political contexts" (p.59) as well as in moving beyond acknowledged differences (Dale & Armitage, 2011).

The need to get messages out and for two way dialogue between communities and decision-making bodies to facilitate a common understanding of wildlife interests and discourses is strong. An increased understanding by scientists of Inuit perspectives on polar bears and polar bear management for example could lead to increased sensitivity of that perspective and therefore more respect and willingness to listen by both parties. Kruse at al. (1998) as well as Suluk and Blakney (2008), suggest that having an increased presence of resource managers from various levels of government in communities communicating and building relationships could increase understanding and trust amongst residents as well as the responsiveness of management to community concerns. This suggestion is still valid today given that in this research, for example, participants trusted information from conservation officers more than the Government of Nunavut although the conservation officers work for the Government of Nunavut. The

difference was attributed to the fact that conservation officers live in the communities and are seen out on the land interacting with people and wildlife.

Utilizing methods of communication that reach local people is also important to facilitating communication between communities and decision-making bodies. In Kotierk's (2012) public opinion poll, Inuit living in the Kivalliq Region reported that they received information from radio and T.V. news, newspaper articles, family, or friends while the preferred method of providing input to the Department of Environment was through a community group, direct contact with a government staff member, or public meetings. These methods of communication will be important to facilitating two way dialogue with elders who are well respected, who pass on knowledge, and many of whom, judging from this research, are the most apprehensive about the co-management system.

3.1.2.2 Power

Recommendations that prescribe more involvement and power for resource users in wildlife management decision-making are directly applicable to pushing the evolution of the Nunavut wildlife co-management regime closer to the vision described in the Nunavut Land Claims Agreement. Specifically, the NLCA (1993, Section 5.1.2 (e)) calls for an "an effective system of wildlife management that complements Inuit harvesting rights and priorities, and recognizes Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat". Not only has participation of resource users in group decision making been identified as a requirement for management to be effective (Armitage et al., 2009; Stenseke, 2009; de Vos & Tatenhove, 2011), but in a rapidly changing Arctic social-ecological system, increased involvement of harvesters and community members in research (Ford et al.,

2007), more harvesting flexibility from overly constraining management decisions (Dale & Armitage, 2011), and more authority given to co-management boards (Urquhart, 2012) has been recommended. Clark and Milloy (2014) describe how improvements to a resource management system must occur at the bottom to reflect resource user priorities and that if local people are involved, better decisions will likely be made. They recommend small-scale changes where adaptive learning can occur as an alternative to comprehensive management plans. The recommendations described above build directly on the principle of subsidiarity (Spicker, 1991) identified in Chapter 1 that promotes decentralization and in the context of political decisions that decisions should be made at the lowest level possible. To illustrate the importance of the involvement of resource users in decision-making, the example of dissatisfaction with polar bear management outcomes can be used. Recognition of Inuit perspectives of polar bears at the community level would likely result in TAHs more acceptable to Inuit living in the communities in the Kivalliq Region.

Recommendations based on the principle of subsidiarity also reflect the higher levels of trust in local institutions demonstrated by participants in this research, and a desire by some Inuit for more power and self-determination in management at the community level. Community level decision-making also ensures that local people are not forgotten when conservation concerns arise. Furthermore, the adaptive capacity of a system may be increased with more community decision-making power because it has been documented by R.O. Rasmussen (Personal communication during his presentation on Arctic Adaptability at the University of Tromsø, April 29, 2014) that often, the adaptive capacity of a governing institution is slower than that of local people. As mentioned previously increased adaptive capacity is important in a rapidly changing Arctic social-ecological system.

Since governance in Nunavut is still very new, it will likely take time to achieve the goal of a system of governance, as identified by White (2009), that is reflective of community priorities and follows *IQ* while functioning as a part of Canada with primarily Inuit in governing and managing roles. In order to accomplish this, Tester and Irniq (2008) call on Inuit to continue to practice *IQ* as a form of resistance so Inuit ways are not transformed or absorbed into bureaucratic management regimes while at the same time, Suluk and Blakney (2008) call for a greater understanding of Western science and governance by Inuit.

Who possesses ultimate decision-making power is a point of contention in co-management because a core principle of co-management is the sharing of decision-making power in governance. This is especially true with controversial decisions like those of the polar bear TAHs made by the co-managed NWMB and subject to approval by the Territorial Government or sometimes the Federal Government. The opinions documented in this research indicate that Inuit at the community level in the Kivalliq Region are dissatisfied with quotas resulting from the NWMB TAH decisions that do not reflect their perspective or needs. Jeremy Webber (2014) makes an observation about sovereignty in decision-making through co-determination that is very relevant to wildlife co-management in Nunavut. In recent relations between indigenous and non-indigenous governments that Webber describes as a continuous process of reconciliation of aboriginal occupancy with Crown sovereignty, too much focus on a conception of sovereignty based on who has "final power of decision" (p. 16) is identified. Such a conception of sovereignty is indicated to often result in a fight over who has ultimate authority as opposed to resolving issues at hand. A conception of sovereignty that is a "product of powers flowing from both indigenous and non-indigenous sources" (p. 22), that "does not require that either party possess a final power of decision, capable of being forced upon the other" (p.23-24),

and allows “multiple assertions of sovereignty to exist” (p. 1) in unresolved tension is determined to be more conducive to the creation of decisions acceptable to all. Furthermore, Webber establishes that most decision-making actually occurs when the ultimate decision-making power is set aside and more emphasis in decision-making should be placed here instead of on who possesses the ultimate decision-making power that rarely needs to be wielded. In addition, he questions whether notions of sovereignty as one party possessing ultimate decision-making power in a democracy can truly exist because this conception of sovereignty has some dependence on the cooperation of those subject to it.

The Haida Gwai Reconciliation Act has been used to exemplify a situation where sovereignty as ultimate decision-making power is set aside. According to Webber (2014), in this situation, the government and indigenous group agreed to disagree and claims to sovereignty are not excluded but each party operates “under their respective authorities and jurisdictions” (p. 21) and “law, and the associated governmental rights originate from within the particular people’s own traditions” (p.20). Weitzner and Manseau (2000) also make note of Gwaii Haanas and identify a strategy of agreeing to disagree as a functional method of achieving co-management and recognizing multiple decision-making powers.

Recognition of the Inuit perspective of polar bears in decision-making that leads to determination of the TAH could help to create a situation where less emphasis is placed on who has ultimate decision-making power and is therefore more conducive to the creation of decisions more acceptable to all parties involved.

3.1.2.3 Capacity

Igluligaarjuk and Tikirarjuaq both reported killing problem bears that have been counted as part of their allotted quota. Community capacity to deal with increasing human-polar bear conflicts is therefore an issue that is central to the conflict of the polar bear TAH. Having the capacity to deter problem bears that may not necessarily be desirable to hunt would alleviate pressure on a finite quota and leave more bears open for subsistence or guided hunting. An example of a program in the Kivalliq Region that has helped to increase community capacity to deal with problem bears is the WWF-Hamlet of Arviat Human-Polar Bear Conflict Reduction Project (WWF, 2013). The project has resulted in reduced threats to people and dogs by reducing the number of bears in or near the community of Arviat as well as contributing to fewer defense kills. Support from the project which is endorsed by community members and officials as well as the Government of Nunavut has allowed the Hamlet to hire a polar bear monitor to chase bears out of the community, as well as to purchase electric fences and steel storage bins for country food.

Climate change will continue to be the primary threat to polar bears (Clark et al., 2013) and a polar bear TAH along with community quotas will continue to be negotiated. Therefore national and international organizations and governments who lobby against the Canadian polar bear hunt should instead focus their efforts in support of initiatives such as the WWF-Hamlet of Arviat Human-Polar Bear Conflict Reduction Project. Similar initiatives would help communities deal with increasing polar bear- human conflicts while creating productive and respectful relationships that promote co-operation towards the common goal of maintaining healthy polar bear populations.

3.1.2.4 Systemic Incentives

Two systemic incentives that could potentially enhance coexistence efforts between Kivalliq communities and polar bears are compensation payments and guided polar bear hunts. A systemic incentive also known as a "structural fix" (Heberlein, 2012, p. 6) can be considered a management strategy that works with attitudes to produce desired management outcomes.

In Nunavut, damage caused by polar bears, grizzlies, and wolverines includes damage to traps, cabins, food caches, and food theft. In cases where people were not allowed to shoot the offending animal, desire for compensation to reimburse hunters for loss of meat or damage to property was expressed in interviews. Compensation payments and subsidies have traditionally been used to reimburse livestock owners for losses or provide funding to landowners to implement measures to deter destruction and loss caused by large carnivores (Karlsson & Sjöström, 2011). The aim behind compensation payments and subsidies is to avoid conflict and provide an incentive to reduce carnivore mortality (Karlsson & Sjöström, 2011). Naughton-Treves et al. (2003) found that tolerance was not improved by compensation payments; however people were supportive of compensation payments as a method of management. More recently, Karlsson and Sjöström (2011) also supported by Rodriguez et al. (2003) found that compensation payments do increase tolerance towards large carnivores, and so are a useful management strategy to reduce carnivore mortality caused by humans. A system of compensation payments in Nunavut could provide more incentive to deter problem bears instead of shooting them.

Although guided polar bear hunting does not currently occur in any of the communities that participated in this study, interest in guiding polar bear hunting was expressed during interviews. Dowsley (2009b) and Wenzel (2009) recount that a guided hunt occurs when an

Aboriginal person (in this case Inuit) transfers their right to hunt a polar bear (recognized by Canada and the 1973 International Agreement on the Conservation of Polar Bears and Their Habitat (Clark et al., 2008)) to a non-Aboriginal person (the right to make this transfer is recognized by Canada as long as the hunt is guided by an Aboriginal person). Guided polar bear hunting is considered a form of ecotourism by Dowsley (2009b) and a management strategy that can generate support for co-management by Freeman and Wenzel (2006). It is important to note that guided polar bear hunting follows a specific protocol bounded by co-management decisions where communities decide the number of tags from their allotted quota they wish to devote to guided hunting and therefore it does not contribute to an increased number of polar bears killed (Dowsley & Wenzel, 2008).

There are two noted benefits to communities from guided polar bear hunting that could act as incentives to increase co-existence efforts with polar bears. Advantages of the guided polar bear hunt to communities include an economic benefit of substantially more than what would be received for a subsistence hunt that is usually reinvested in harvesting equipment (Wenzel, 2009), and preservation of cultural skills such as using dog teams to travel and making traditional clothing (Dowsley, 2009b). These advantages are still accurate, but the economic benefit derived from guiding polar bear hunts has been reduced because the listing of the polar bear under the United States Endangered Species Act (ESA) in 2008 with the associated restriction on conservation hunt trophies being brought into the United States (discussed previously) has caused a significant reduction in guided hunts (Tyrrell & Clark, 2014). Development of guided polar bear hunting businesses in Tikirajuaq or Igluligaarjuk is unlikely to increase acceptance of quotas that are viewed as too small, but it may have the potential to increase tolerance towards the presence of polar bears that might be valuable to a guided hunt.

3.2 Conducting Interview Based Research in the Kivalliq Region of Nunavut: Reflections on the Research Process

3.2.1 Reflections on the Research Process in Nunavut

As I have come to understand from this research and my experiences in Nunavut, most Inuit trust those who are close to them, who they interact with, and feel comfortable with. As an outsider from southern Canada, I encountered this during the beginning of my stay in each community. Almost everyone I met was interested in finding out where I was from and what I was doing in their community. There were those who were interested in the project right away and were just relieved to find out that I was not working for Greenpeace or a mining company. Often, however, after describing who I was and that I was conducting a research project on local opinions about resource management and environmental decision-making, I was met with a suspicious stare or an abrupt end to the conversation. This reaction was more prevalent and apparent in a larger community like Qamani'tuaq where more research has occurred recently than the other communities. Many people there were clearly tired of researchers and all of the survey and interview work done as part of mining development. It was also apparent in Kangiqliniq (Rankin Inlet) where the HTO declined to participate in the project after the preliminary visit, likely because they were simply too busy. I believe that if I had not been working with the HTOs, and Douglas Clark and I had not sought out the support of the HTOs from the beginning, not nearly as many people would have been interested in participating in the project or speaking with me. Working with the HTOs also facilitated the formation of many connections with people in each community that resulted in invitations to feasts, meals, and hunting trips. These connections not only made my stay in Nunavut very enjoyable, but also

allowed me to develop a much more realistic view of the opinions and views of the Inuit I interviewed.

During interviews, it usually took a bit of time before people would open up to me and speak freely. Initially the major stumbling block was the consent form detailing the rights of the research participant, how the participant would be acknowledged, what the information gathered in the interview would be used for, and what methods of recording answers to questions were acceptable. Many participants, especially older people, were often very suspicious of the requirement of the consent form and their signature or oral consent. This was compounded by the time required to explain what the consent form was, especially through translation. Some participants also thought the consent form was the interview itself and it sometimes took upwards of half an hour to maneuver through the consent form. For example, one participant initially refused to sign the consent form. Since I said I could not do the interview without the consent form, the participant eventually agreed to fill out the form only because they had so many important things to say, they felt comfortable with me, and knew it wasn't me who was making people sign the consent form, but my boss (the University). Once past the consent form, participants were usually much more comfortable and it was much easier to conduct the interview and communicate.

Clear communication between researchers and research participants is a requirement for research to be successful and to obtain accurate results. Collings (2009) describes communicative competence as essential to overcoming hostility and apathy towards researchers and improving rapport with research participants. Initially, I was quite timid in my interactions with Inuit in each of the communities, and that how I conducted myself, my actions, and the products of my research could have real-life consequences for the people living there weighed

heavily on me. As I spent more time in the participating communities, I developed more cultural awareness, confidence, and learned how to act and communicate with competency. Consequently, once I developed more communicative competency in the context of the communities where I was working, Inuit in the communities took me more seriously, had more respect for who I was and what I was saying, and were more willing to share information.

I also unwittingly used a form of another theoretical approach to conducting interview research described as phased assertion. Collings (2009) describes phased assertion as "drawing out and convincing informants that the field researcher is already an insider" (p. 2). While I may not have tried to convince research participants that I was an insider, during preliminary visits and interviews, I made an effort to identify with participants and express solidarity through my interest in the animals, Inuit traditions, and the governance of resources in Nunavut.

Interviewing older people was interesting because they always had so much to say. To conduct interviews with elders respectfully, a certain unspoken protocol needed to be followed. In this protocol it was clear that the elder was in control of how the interview progressed even though I was conducting the interview. Usually the elder being interviewed would want to talk for the first part of the interview and give information about certain topics. After the elder finished saying what they had to say, they would ask if I had any questions. At this point, I would ask any questions from the interview guide that were still relevant, but many times the information given voluntarily covered many of the questions.

Sharing food and especially country food was also an important part of the interview process. I was aware that it was special when I received country food during interviews and while visiting, however, it was not until I returned from conducting the interviews in Nunavut

that Karla Jessen-Williamson informed me how significant it was when I received country food. She said receiving country food was an indication that people were opening up to me and accepting me and that Inuit food (*inuksiutit*) had been instrumental in her research work (Personal communication with Karla Jessen-Williamson, September 30, 2013).

3.2.2 Reflections on the TUNDRA Project

There are various expectations across the Arctic for community involvement in research projects and reporting back of research results. Requirements that lead to research being conducted in a manner viewed as ethically sound in Canada are much more intensive in Canada than in the other countries that participated in the TUNDRA project. Meeting with the communities and HTOs as well as obtaining permission from an institution like the Nunavut Research Institute prior to conducting research was not a requirement in the other countries. Also, although some researchers involved with TUNDRA plan to report back findings to participants in Russia, the United States (Alaska), and Norway, this is not as common of a practice in these countries as it is in Canada.

The requirements for the conduct of ethical research in Canada resulted in the Canadian interview component of the research taking more time than it did in other countries. For instance, initially I bought a one-way plane ticket to Igluligaarjuk, and moved on to Qamani'tuaq once interviews had been completed properly in Igluligaarjuk and followed a similar progression when moving on to Tikirarjuaq. Although I spent more time conducting interviews in each of the communities in Canada (three months total), it likely resulted in more positive researcher-participant relationships.

To facilitate circumpolar comparison, the questions asked in the standardized TUNDRA Project interview guide covered a very wide range of topics related to governing interactions and resource management. For my thesis research, I have focused on topics from the TUNDRA interview guide that were viewed as important and relevant to the research participants. Overall, however, although I designed some questions specific to Nunavut, and we modified questions in the interview guide to fit the Nunavut context, many of the questions designed by the TUNDRA project steering committee were not necessarily viewed as important or relevant by the research participants in Nunavut. Some topics in the interview guide that were viewed as relevant by research participants were chosen based on experience of the researchers writing the interview guide and were not necessarily attributable to community consultation prior to the interview guide being written. A challenge of conducting a large circumpolar project based in a faraway European country is therefore involving communities across the Arctic and doing research that is important to the communities involved. It is very difficult to design research questions that facilitate international comparison while still involving communities across the circumpolar Arctic in the process of designing the interview questions.

Involvement of participants in research is also often constrained by restrictive research timeframes. Often research grants do not allow enough time for research, especially Arctic research, to be conducted as thoroughly as one would like or in a fashion more acceptable to researchers and research participants. Although the TUNDRA Project in Canada only proceeded with community consent, because of its comprehensive and extensive nature, the project as a whole was not an exception to this issue of timeframe and was constrained by a looming end date where funding for the project would be cut off. Nevertheless, funding for the project was substantial enough that along with the guidance of Douglas Clark who ensured the project

proceeded properly in Canada, we were able to take the time to carry out the project ethically within the timeframe of the larger project once communities agreed to participate. We also ensured that we were able to go back to communities to present results once the results had been analyzed.

The extensive nature of the TUNDRA project interviews contributed to very long interview times that were sometimes an issue. Interviews averaged approximately two and a half hours in length although some were much shorter and some much longer. Often interview participants would become tired half way through the interview and a number of breaks would be required to complete the entire interview. An interview shorter in length and more focused in scope would likely facilitate more elaborate answers from some participants.

In Canada, despite the fact that participating communities were not involved in designing the TUNDRA project, every effort was taken to include the communities in the project and in determining how the project was implemented. In fact, once the participating communities indicated their interest and we had received our Nunavut Research Institute license, during meetings with the HTOs prior to conducting interviews, I indicated that the project did not need to follow the interview guide and research could proceed however they felt was best to gather the desired information. It was also made clear that participants only needed to answer questions they wanted to answer. All of the HTOs elected to use the TUNDRA designed interview guide because they thought this was the best way of gathering the information and because it was already written. Although this study only proceeded with community consent and success was completely dependent on the interest of Inuit in the communities, in the future, if a large scale project seeks out involvement of people in an area of Nunavut, and the people there wish to be

involved, community involvement should begin with project conception, not after the project has already been designed.

As a graduate student working on a large scale circumpolar project like TUNDRA, many opportunities were afforded to me and many challenges were presented. It should be noted that during my time working with the TUNDRA Project, I was treated as a researcher with valuable insights and not just another graduate student who was a data collecting tool. For this I am grateful and although it may have come with some more responsibility, it is an approach that inspires greater learning and is a way of interacting with graduate students that I would advise leaders of similar projects to adopt.

3.3 Research Contributions

3.3.1 TUNDRA Project Research Contributions

There was a substantial amount of information collected in the TUNDRA interviews not used in this thesis that could be useful to Arctic research as well as to participating communities. Many plans for products of this research are currently underway. An example of a potentially useful product created from this research are the maps I created from the land use portion of the TUNDRA project interviews that represent important and frequently used harvest areas. These maps could be used by HTOs to show areas of sensitivity to mining exploration and development. Documentation of sensitive areas may be important with the development of new land use plans created by the Nunavut Planning Commission (NPC) that are not supported by the HTOs and RWOs and keep as much land as possible open to mining exploration even in caribou calving habitat (Bernauer, 2014).

3.3.2 Thesis Related Research Contributions

What I believe to be the most important contribution of this thesis is documentation and sharing of Inuit opinions about polar bears and their management with the academic community in a form acceptable to the academic community. Knowledge of Inuit attitudes in co-managing wildlife and more specifically in co-managing polar bears in the Kivalliq Region of Nunavut could help guide adaptive co-management and produce solutions more acceptable to both Inuit and government involved. With rapid social and ecological changes occurring in Arctic areas (Clark et al., 2008), such solutions have the potential to improve wildlife-human co-existence efforts, as well as the lives of Inuit in Nunavut who co-exist with polar bears. Research participants and communities were very interested in getting their opinions about polar bears and their management out where others could know about what they think. Many of the research participants in this project do not feel that scientists listen to them. They see the TUNDRA project and the work I have done on this thesis as a method of getting their voices and opinions heard. Some participants have specifically requested that results from this work should be shown to scientists so they can understand what Inuit are saying in a form that the scientists will understand.

During validation of results, except for the research results related to polar bears, participants were not particularly interested in the other results from their communities related to resource management and harvesting because these are things they already know. They were interested in the circumpolar aspect of the research and what other people around the Arctic are doing or how governance works in other countries. Although reporting back all of the research results from the TUNDRA project was not feasible for me to do, during validation of results used in this thesis in each of the participating communities, some general results from other countries

were discussed. Also, reports and publications from the TUNDRA project that include the various countries will be sent to the participating communities in Nunavut. Sharing of this information will contribute to a sharing of circumpolar Arctic experiences and a greater understanding of how northern peoples from around the world are adapting to change.

There is often animosity and tension between government officials or RCMP and Inuit who are local to communities in Nunavut. For example, when a polar bear almost came into Igluligaarjuk in June of 2014, the RCMP who showed up after the bear had been chased away chastised the Inuit men who had chased the bear out of town for not calling them first. In response, the Inuit men showed quiet resistance and one of them asked "what is your number again?" even though he knew very well what the phone number was. I believe another very important product of this research is the good feeling and goodwill that have developed during my time in Igluligaarjuk, Tikirarjuaq, and Qamani'tuaq between a researcher (me) and study participants as well as non-study participants living in the three communities. In an environment fraught with misunderstanding between people, a relationship of goodwill is a step forward in the establishment of trust and therefore towards effective co-management of resources. Positive relationships based on strong social capital and trust are what successful co-management regimes are built on and will likely pave the way for new research that is relevant to communities' use of animals and resources.

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APPENDICES

Appendix A: TUNDRA Project Interview Guide

Community key informants

Community: _____ Interviewee ID: _____

Interviewer: _____ Date: _____

Recorder: _____

Start Time: _____

To interviewer: *Sometimes we will not get an answer to the questions. Code NA's as:*

-1 Don't know, -2 No answer, -3 Not applicable

Some questions may seem strange to various participants, so interviewer should indicate that some questions may be more applicable to other countries, but are in the interview for puposes of comparison between countries participating in TUNDRA.

Part 1 Landscape connection (Time Limit 45 minutes)

To talk about your use and connection to the landscape we will present a map of your community and the surrounding area. You can choose between three different scales, depending on which maps you think is the best reflecting your use.

[Show the maps first. Ask the interviewee to identify the study site map and their current location on it. This will indicate if their proficiency at reading maps is good. Interviewer should mark if their proficiency at reading maps is good.]

1. *Could you show us where you live on the map? Are there other landmarks you could identify on the map, such as lakes, rivers, mountains that you recognize. This is to see if map reading ability is good.*

After I get an idea of map reading ability, do this part. We want you to mark the important areas for you. We will number them, so we could associate your comments to these drawings. We will start mapping your use of the area the last year.

[The interviewer must read out the numbers as they are drawn to link numbers to digital recorder]

2. *If you think about <u>the last year</u>, which places have you used on this map? Go through questions place by place to 4.4. Also something to think about is are oceans, freshwater, or land resources most important for the respondent?*

Markers: Red for their important areas, Blue for culturally important areas, Black for their parents and grandparents important areas. Me Green.

[If they focus on harvest activities go to 3 A, for other activities 3 B]

<u>Remember!</u> The scale is at a size that makes it very difficult to identify your specific harvest area

<u>What did you do at these places?/ What were you hunting? Repeat the following sequence of questions for each of the places specified (3-4.4). **Place specific questions.**</u>

3. A. *Subsistence/Harvest activities identified by respondents in that place(may also include route to get out to the place).* **[Check all that apply]**

□ Moose □ Caribou □ Ptarmigan/Grouse □ Fishing nets □ Other fishing □ Berries □ Mushrooms □ Firewood □ Pastures □ Geese □ Duck □ Hares □ Bears □ Wolves □ Other furbearers

□Other _____

3. B. *Other activities not related to harvest* **or non-subsistence/regular things.[Check all that apply]**

Hiking □ Exercise □ Walking □Snowmobiling □ Camping □ Picnicking/Eating □ Having a fire (what kind of fuel did they ue to cook, where did they get it?) □ Swimming □ Skiing □ "being out there" □ Photography "□ □ Driving/ATV ☐ Dog sledding ☐ Social gathering

□ Wildlife/nature viewing,
What?_____

□Other _____

4.0 *How many times did you visit the place the last year?* (will be approximate)_____

4.1. *If you have visited this place for many days and spent the night there; for how long did your visit last (approximate days or weeks, might entail a lot of travel out to place and not that long at actual destination, so could include travel/length of trip)?*

4.2. *With whom did you harvest or conduct these activities? (Need to link activities with who activities were conducted with)*

	Activities
Alone	
Household members	
Extended family not living in the household	
Friends	
Neighbors (same as friends)	
Others	

4.3. *Do other people/resource groups use the same place (other families, Inuit or First Nation groups, guided sport hunters, communities)?*

☐ No ☐ Yes, please name the groups

_____
_____
_____

4.4. *Have you ever experienced any disagreements about use related to this place?*

☐ No ☐ Yes

Describe_____
_____
_____
_____

Not place specific questions

4.5. *For how long have you or your family used the area* [**refer to the activity**]?

□ No. of generations _____

□ As long as (my) people have lived here/always

□ Since the family moved here in _____

□ We started to use the area _____years ago

4.6. *If you couldn't go to any of the places drawn here, are there other areas where you could conduct the same activity/harvest*? (Alternatives)

☐ No ☐ Yes

Why/Why not?

Has the use of ski doos and ATVs changed use patterns and how far people go? How many miles do you usually put on your skidoo or machines per year?

5. *Are there still other areas which you don't use, but yet are important for you* **[areas where there are not necessarily activities, but is important for cultural reasons**]?

Describe:_____
_____

_____
_____

6. *Have the use of the surrounding areas of your settlement changed since your childhood* **[reflecting the parents use]**?

☐ No ☐ Yes

If yes, please draw areas which has been used by your parents and describe

_____
_____
_____
_____

7. *Did your grandparents use these areas differently*?

☐ No ☐ Yes

If yes, please draw areas which have been used by your grandparents and describe.

When the landscape mapping exercise is over we should try to get the idea about the degree of importance of the different areas.

8. *On the basis of our discussion, over the past 3 years, which of these places are most important for you. We are interested in knowing what kind of resource/activity you prioritize in your life.* **[The goal is to distinguish between important and very important]**?

PlaceID1 _____ PlaceID2 _____ PlaceID3 _____ PlaceID4 _____ PlaceID5 _____

To interviewer: *Sometimes we will not get an answer to the questions. Code NA's as:*

-1 Don't know, -2 No answer, -3 Not applicable

PART2 Harvest and local management of ecosystem services

Important: animals, mining, climate

Harvest

9. A. *What are the most important resources (we used term animal or other things) harvested*?

Resource 1._____

Resource 2._____

Resource 3._____

9. B. *How many animals or kilos do you usually harvest of the three most important resources during a year* **[write down the most important resources on a note for later questions]**?

Resource 1: How much? _____

Resource 2: How much? _____

Resource 3: How much? _____

□ Don't want to report numbers

9. C*. Do you hunt together with others? In case you do, how many are you in the group?*

9 D. *How many animals or kilos does the group usually harvest of the three most important resources during a year?*

Resource 1: How much? _____

Resource 2: How much? _____

Resource 3: How much? _____

□ Don't want to report numbers

10 A. *How often do you eat the following foods harvested from the land?* **[you can mark and combine several alternatives, e.g. x for your own harvesting and C for other members of the local community]**										10 B. *How do you get local food? For each harvested food, where does it come from?*					
	Season 1 Spring/summer			**Season** 2 autumn/winter			**All year**								
Resource	**Occationally**	**Weekly**	**>1Week**	**Occationally**	**Weekly**	**>1 Week**	**Occationally**	**Weekly**	**>1 Week**	A	B	C	D	E	F
Fish															
Meat from wild mammals (what species?)															
Meat from wild birds															
Egg from wild birds															
Berries															
Mushrooms															
Potato/ vegetable															
Other															

X=harvest yourself
A=You or someone else in your household
B=Family members not a part of your household

C=Other community members

D=Non community members
E=Bought
F=Friends

11 A. *If you give away resources, to whom do you give?*

□ Family □ People I know in the village □ Stores □ Friends □ Colleges

□ Markets place/Bazaar □ Others _____

11 B. *If you trade/barter, with whom?*

□ Family □ People I know in the village □ Stores □ Friends □ Colleges

□ Markets place/Bazaar □ Others _____

11 C. *If you sell products, to whom do you sell? An Inuk can dispose of harvest any way he/she wants to.If sell to a meat plant or restaurant, need a tag.*

□ Family □ People I know in the village □ Stores □ Slaughter houses □ friends □ Collegues

□ Markets place/Bazaar □ Others _____

Food security

12. *If the local store closed or there was difficulty getting store bought food into* **[name of the village]**, *what would the consequences be*? What are the consequences of closing shops/In Alaska we asked: Have there been times when food typically purchased at the store was not available?

☐ shop is already closed, ☐ drive car/ATV/snowmobile to get food, ☐ food is/will be brought in by plane/helicopter/boat, ☐ she/he would move to another place ☐would increase hunting and fishing to get food, ☐ change storage possibilities

☐ I would, describe

_____
_____
_____

13. *Does the price on store bought food mean anything for whether you continue to hunt, fish, and collect berries/mushroom*?

□yes □ no □ why or why not?

_____
_____
_____

14. If you were unable to hunt, harvest and fish, what would it mean to you? For example if you got sick. **[Including other consequences than material associated with the quality of life]**? Would you move?

Motorized vehicles and subsidies

15.A. *If you use motorized vehicles or boats for your harvest/herding activities, how important are the fuel prices* **[recall question 9 A, if resources related to herding or hunting was not mentioned; go to 19]**?

☐ Important ☐ Not important

Why or why not are they important?_____

_____

_____

15.B. *Are there other costs that impact your use of resources/nature*?

16. Do you receive any support or subsidies/money that is supposed to be used specifically for your harvest activities ?[Write yes/no for whether supportsystems exist and if they get it. Describe the type of support or reason why they do not get support in the open field]?

	Mark	Type of subsidies
No, does not exist		
Yes exists, but I do not receive		
Yes exist, and I receive		

17. *If you didn't have support or subsidis , would this impact your harvest activities?* Only for those who get subsidies.

_____

__

18. *Are there any regulations hampering your harvest activities? How?* Maybe the Thelon Wildlife Sanctuary?

_____

Cooperation in the local community

22. *How strongly would you agree or disagree with the following statements about the community* (here assure the interviewee that we will not publish the end result for specific communities) (1 strongly disagree to 5 strongly agree) Agree or disagree for elders?

	1	2	3	4	5
APeople in [**name of village**] are willing to help one another					
B[**name of village**] is a close community compared with other villages					
CMost people in [**name of village**] can be trusted					
DThere are many opportunities to meet people in [**name of village**] and work towards common goals					
EMost people in [**name of village**] is involved in activities that benefit the community					
FThere are volunteer groups that actively work for common benefits of [**name of village**]					

23. *On a scale from 1 to 5, where 1 is least agreed and 5 most agreed, how strongly would you agree with the following statements [agree or disagree for elders]?*

Object specific – Production	1	2	3	4	5	NR
EPredator numbers should be reduced to increase harvesting of resources						
FIt is important to fascilitate the harvest of maximum yields of resources						
GThe use of scooter- and ATVs should to a larger extent be reserved those who depend on nature for a living						
Object specific – Traditions						
HThe management of nature should be based on local customs and harvesting traditions						
IThe management of nature should t be based more on documented expert knowledge and less on local knowledge.						
Mining						
JMore mining will create problems for peoples' use of nature						
KMore mining will particularly impact the harvesting of caribou						

LMining must be prioritized over conservation, despite more pollution in nearby areas						
MThe income generated from mining will in total be more benefical than the caveats for the communities						

Managing harvesting

For elders: What animals have you or your household hunted this year.

24.A. *Think about the last year; did you or members of your household hunt or harvest some of the following species?* After ask about previous years[**the focus is on what species are harvested, not the quantity of harvesting**] **[If hunting is not mentioned, go to 25]**

	Yes	**No**	**Hunting previous years**
Caribou			
Moose			
Wolf			
Brown bear			
Black bear			
Polar bear			
Wolverine			
Lynx			
Red fox			
Arctic fox			
Hare			
Ptarmigan			
Geese			
Duck			
Muskoxen			
Eagle			
Other			

24 B. *How many in your household hunt?* □ Hunting myself □ Do not hunt myself

Total number in the houshold (including the respondent)_____

25. *Do you think the population of the following species is too low or too high or should remain as is? (stress if ACTIVELY should be reduced or increased)(amount of the following species should be increased, decreased, or remain as is?)* (1 = too low

26. *Do you think the following species are managed successfully by those responsible?*

(increase), 2= decrease (too high), 3= remain as is)

For elders: are the populations of the different animals here too high or too low or just right? Then break it down.

For elders: should anything be done to change the population levels of these animals?

Resource	**1**	**2**	**3**	**NR**	**Yes**	**No**	**Partly/NR**
Caribou							
Moose							
Wolf							
Brown bear							
Muskox							
Polar bear							
Wolverine							
Lynx							
Red fox							
Arctic fox							
Hare							
Ptarmigan							
Geese							
Duck							
Other e.g:egg collection							

27. *What strategies would you/your household adopt if the hunting resources decline* **[Check all that apply]? Might be good to go through list**

□travel to new hunting grounds; □target other resources; □increase the efforts; □reduce the effort/stop hunting as an individual voluntarily; □more selective harvest; □less selective harvest; □ask for or offer help from/to others; □depends on what other community members do; □nothing different; □follow regulations from the authorities;
□other_____

[The table below applies for question 29.A and 29.B, mark only those sources mentioned. It was recommended that we list the options]

29.A. *We are trying to learn where hunters get their information about animal numbers and locations. Which sources do you trust or not trust regarding information about resource*

abundance?, **[i.e. information about abundance and number for that resource, must be linked to the most important resource mentioned in 9A]**

	Reliable	Not reliable
Personal experience either yours or others within your household		
Other hunters from the community		
Other hunters from outside the community		
Elders		
Other resource users		
Newspaper articles		
Wildlife biologists (biological based)		
Wildlife Officers (legal authority)		
NGOs/ environmental organizations		
International organizations/ governments		
Hunters and Trappers Organizations		
Regional Wildlife Board		
Territorial Govt		
Federal Govt		

30. A. *When the most important land based resources decline; why do they decline? What are causes of declines in hunting resources.* ***[Scale: 1 least important to 7 very important. It was recommended that we list the options.] Elders: ask as open question.***

[The interviewee should select <u>that hunting resource</u> that is regarded to be most important for the local community]

Specify species selected:	1	2	3	4	5	6	7	NR
Local harvest								
Non-local harvest (prob not important)								
Climate factors								
Predators								
Human disturbance (e.g. building projects)								
Pasture degradation caused by over grazing								
No special reason, it is natural								
Poaching (prob not a problem)								
Others								

Elders: Is there something that should be done to improve hunting?

31. A. *On a scale from 1 to 7, what mangagment/control efforts are important in your local community for improving the conditions of hunting resources?* **[1=not important, 7=very important, Respondent should choose the most important game species]**

A. Define large mammal speices: e.g. moose, caribou:	1	2	3	4	5	6	7	NR
Reduced harvest								
More selective harvest (target unproductive animals- calves & males)								
Reduced disturbance encroachments								
Reduce poaching								
Close the area for people from outside								
Other								

31.B. In case several hunting resources are mentioned, describe these:

Redundant for Nunavut is always HTO.

34.A. *How does your local community organize the management of the most important resources in your community*?

[define resource]

A. □ Not organized, Individual decisions by /hunter/households
B. □ Members of the group discuss and decide together [informal]
C. □ We discuss and decide together with people in other herding/hunting groups [informal]
D. □ We have people in our communities that are respected and listened to when managing these resources
E. □ Formal arrangements:
□ hunting groups □ corporations □ other_____

34.B. If a formal arrangements exist, who had the responsibility of establising such a group?
□ local people
□ people outside the local community

How many meetings a annually _____ or weekly _____

34.C. *Do you have formal meetings for handling disagreements about the use of key resources*? If such meeting arenas do not exist, is it desirable to establish such meetings?

□Yes □ No □Not relevant, handled by authorities

34.D. *Describe how well you think these (the above) arrangements work*

_____
_____
_____

35.A. *On a scale from 1 to 5, where 1 is least agreed and 5 most agreed, how strongly would you agree with the following statements?*

Short version of the new ecological paradigm scale (NEP) – general view on nature	1	2	3	4	5	NR
ANature is very delicate and easily upset						
BHumans are severely abusing the environment						
CHuman ingenuity will ensure that we do not make the earth unlivable						
DThe so called crisis related toclimate change has been greatly exaggerated						
E Nature is strong enough to cope with impact of modern industrial nations						

PART 3 Local influences - governing interactions

To interviewer: *Sometimes we will not get an answer to the questions. Code NA's as:*

-1 Don't know, -2 No answer, -3 Not applicable

[We want to learn about how people exercise influence over managing areas important to them, and how decisions on extractive industries and larger development projects take local concerns about resources into account].

36. We list a few examples of management areas/use of renewable resources, which may be important for how your local community uses the land. On a scale from 1 to 7 [1=not important 7= very important], how important are the following management areas for your community?: **Another way of asking: How important is the management of the following topics in your**

community? Elders: what are the most important managemement topics in your community? Or it is important to control :

	1	2	3	4	5	6	7	NR
Predator control								
Quotas								
Control The use of motorized vehicles								
Protected areas								
Small game hunting								
Large game hunting								
Freshwater fishing								
Property management								
Recreational use								
Caribou management								
Minerals, gravel								
Other ex: non-local use								

Based on the discussion so far, what are the most important topics of mangagement?:

Input:

37. ***Have you given any input toharvesting or other issues of land use (wildlife/ecosystem management) during the last three years? Or to decisions about hunting?*** *Might have to just write down what they say, then categorize in the tables later.*

[This use could be e.g. area mangement, protected area management, mangement of predators I should list what they gave input towards]

Harvesting/land use **[specify]**: No □ Yes □

I should listen to what they say, write it down then categorize later. Don't need to read out categories to them.

If no; is it because of:

Table A	*37*	40Answer this part after the questions about harvesting and land use

	Plans and decision-making on harvesting or other use of land/could also phrase it as wildlife/ecosystem management	*Given any input on Decision-making on large scale encroachments/extractive industries* (mining, wind mills, hydroelectric power plants, other development projects) that could affect your harvest activities?
A Reluctant to get involved		
B Not used to give input		
C Lack of information about the process (e.g. was not aware of hearing processes or too short deadlines)		
D Made an attempt to give input, but did not succeed ……		
E Wanted to meet the decision-makers, but no transport available		
F Did not have to, another person presented our view on the specific case		
G Not necessary, our interests are ensured		
H Not relevant		
I Too much bother		

Input mechanisms

38. *If the answer is yes (question above) what kind of mechanism did you use to get your voice heard?*

Table B	*37*	**40[**Answer this part after the questions about harvesting and land use**]**
	Issues and decision-making about harvesting or other use of land	*Plans and decision-making about large scale encroachments (e.g. industry planning)*
actively joined an organization/is a member of organization **[name]** _____and communicated my view to this organization	□ Env Org; □ Ind Org; □Hunt Org; □Herder Org; □Recreat Org; □Political part □Other	□ Env Org; □ Ind Org; □Hunt Org; □Herder Org; □Recreat Org; □Political part □Other
provided input in an official hearing process		
Been consulted **[by whom]**		
Participated in negotiations		
wrote something for the newspaper, other media contact		

made a personal contact with an influential person		
Invited to a meeting with the managers		
actively participated in local community meetings **[specify who initiated]**		
Initiated and participated in a petition		
taken part in a protest march or demonstration		
Other		

Experienced participation

39. *Have you experienced that your viewpoints have been included in the assessments/management?*

Table C	*37*	**40[**Answer this part after the questions about harvesting and land use**]**
	Issues and decision-making about harvesting or other use of land	*Plans and decision-making about large scale encroachments (e.g. industry planning)*
Not been informed at all by planning authority and decision-makers		
Just informed, but not given the possibility to respond to regulations or plans		
My concerns have partly been included		
Concerns included, the process experienced as a two-ways dialogue		
Not relevant		

40. ***Have you made an attempt to give input in relation to large scale encroachments/Industrial Developments that could affect your harvest activities?*** **Or to decisins about mining?**

[*Return to table A***]***:*

Encroachment projects: □No □Yes specify what.

If the answer is no, look into table A above, and state why you have not given input.

If your answer is yes to the question about input, what kind of mechanisms did you apply? Look into table B.

How did you experience your engagement? Look into table C.

Transparency in resource governance

41*. In what way have you been informed about plans and decision-making about harvesting or other use of land?*

A. Official information from management bodies	
B.Media information, newspapers, radio, television,	
C.Internet	
D. Talking with people	
E. Independent assessments	
F. Information from business company	
G. Consultants	
H. Friends/family/collegues	
I. Other i.e. public meeting	

42. *When decisions are done, have you been informed about priorities taken and how decisions were made?*

Decision-making on harvesting or other use of land: □ Yes □ No

Decision-making on large scale encroachments (e.g. industry planning): □ Yes □ No

43. *Are there current agreements between industry companies e.g. mining companies, local government or others?*

No □ Yes □

If yes; what are this(these) agreement(s) about?

……..

If yes, have your community had any influence or input in the negotiation processes prior to the signing of agreements?

No □ Yes □

Specify:

_____

44. **[Country specific questions about management. Questions based on community Input.]**:

a) Are large carnivores like Polar Bears, Grizzly Bears, wolves and wolverines dangerous/ a nuisance to your community?

b) Do you think these large carnivores are currently being managed well? Do laws and regulations affect how you use and control these animals? How?

c) Is there anything you would change about how these animals are managed?

_____

45. **[Country specific questions about management]**:

<u>General participation and trust relationships</u>

46. *In the last three years have you personally done any of the following things to get your voice heard?*

a) voted in local (Hamlet or HTO) /regional/national or indigenous elections? (specify for each) Yes □ No □

b) have run for elections Yes □ No □

c) actively participated in an election campaign Yes □ No □

d) actively participated in an information campaign Yes □ No □

47. We would like to know more about trust in different institutions/bodies at different levels. Below we have listed 2 levels and industry as a separate category. We ask you to rank your trust on a scale from 1 to 7 where 1 means no trust at all and 7 means high level of trust. **For elders either turst or no trust.**

	1	2	3	4	5	6	7	know about but dont	Don't

								want to answer	know
The National Level									
*A. Federal Government – Examples below if needed									
Fisheries and Oceans Canada									
Health Canada									
Human Resources and Social Development Canada									
Industry Canada									
Natural Resources Canada									
Indigenous/Self Government Bodies									
National Level									
*B. Inuit Tapirit Kanatami (National Inuit organization)									
Territorial Level									
*C. Government of Nunavut									
*D. Nunavut Tungavik Incorportated									
*E. Institutions of Public Governement. Examples below if needed.									
Nunavut Impact Review Board									
Nunavut planning Commission									
Nunavut Surface Rights Tribunal									
Nunavut Water Board									
Nunavut Wildlife Management Board									
Nunavut Marine Council									
Nunavut Wildlife Secretariat									
F. Nunavut Status of Women Council									

G. Other									
Regional Level									
*H. Kivalliq Inuit Association									
*I. Kivalliq Wildlife Board									
Local Level									
*J. Hunters and Trappers Organizations									
*K. Hamlet									
L.Elders/IQ									
***Industry. Examples below if needed.**									
M. Agnico-Eagle-Meadowbank, Meliadine									
N. Areva-Kiggavik									
O. Anconia									
P. Other									

48. *What are the two most important institutions mentioned above in relation to your community?*

[specify]_____

Why are this/these institutions the most important ones?

_____

Appendix B: TUNDRA Project Descriptions for Communities

Note: This document has been translated into Inuktitut. An Inuktitut version is on file with Douglas Clark.

TUNDRA: A University-based Research Project
Plain Language Project Proposal

The project's purpose

Across the Arctic, tundra ecosystems are managed in different ways. In some places, the tundra environment is experiencing increasing changes. These changes will have consequences for local people and their ability to adapt will differ based on management responses.

The goal of TUNDRA is to better understand how environmental decision-making and resource management as well as social and economic conditions affect ecosystems and resources that Arctic communities depend upon locally. Researchers working in different parts of the Arctic around the world will compare their findings.

Methods: How will this project be carried out?

First, it is important to note that our ideas about methods are just initial ideas, and we expect them to change in response to input from participating communities. Although TUNDRA project researchers have some ideas about what we would like to do and how we might do that, we realize there are many ways the project could proceed based on community input. We are committed to undertaking this research in a way that benefits participating communities.

Between March 12 and 18, TUNDRA project researchers met with the Hunters and Trappers Organizations (HTOs) of Qamani'tuaq, Igluligaarjuk, Kangiqliniq and Tikirarjuaq to invite them and their communities to become involved in this project.

The next step would be for researchers to make a second visit later in the spring to plan with HTOs how the research will be conducted. One HTO has suggested a workshop to accomplish this, and we will follow up to see if this would work for other participating communities.

Before any research actually takes place, we will get a permit to do this research from the Nunavut Research Institute. After we get the permit, we plan to come to the communities to collect data sometime over the spring, summer or fall of 2013. We would like to come at a time that is best for the communities and we are interested in hearing when would be a good time to come.

In order to understand decision-making about resource management and how environmental decision making affects the resources that people depend upon locally, there are a number of methods we can use. In other countries, TUNDRA researchers have collected data by interviewing community members and mapping their use of the land. In the Kivalliq, we can customize those methods to ensure they are appropriate and useful. We could also use other

methods such as workshops or group discussions, and are open to other ideas too. The topics we would like to learn about in the Kivalliq region are:

1. how people use the land (and sea)

2. what resources are important to people and how they are being managed

3. peoples' observations about decision-making processes, and how well they're working

If interviews are selected as the appropriate method to use, we plan to hire an Inuktitut translator for participants who would like to complete interviews in Inuktitut, and to translate and transcribe interviews. Each study participant will receive an honorarium to acknowledge their time and the knowledge they share.

After the interviews have taken place and we have analyzed the results, we plan to make a third visit in the fall of 2013 or winter of 2014 so we can present and discuss our findings with community members. This visit will be particularly important to ensure we have accurately understood what people have told us.

What are the potential benefits for communities?

The TUNDRA project offers a forum where Inuit observations and opinions can be documented and voiced at the local and global level. What is heard in Nunavut will be shared and compared with what is heard from communities across the circumpolar north. Therefore, participants have opportunities to be part of a larger effort to learn about what's going on, and how northern peoples from around the world are adapting to changes in different places. We hope that such a shared understanding of what Arctic communities are experiencing and what they value can help those communities to achieve their own goals in environmental management.

TUNDRA (www.TUNDRA.uit.no) is an international project with universities in Russia, Norway, Canada and the United States (Alaska) working together. Funding for this research comes from the Norwegian Research Council.

Researchers

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I was born in Victoria, B.C. and lived in communities across the north while working with Parks Canada. These places include Pangnirtung, Nunavut; Churchill, Manitoba; and Haines Junction, Yukon. I am now a university professor who studies wildlife management in and with communities across the north. Much of my research has been in the Yukon, but I have also conducted research on grizzly bear management with the HTO in Qamani'tuaq and in the Inuvialuit Settlement Region. My wife is from Montreal but we met in the Yukon, and we now have two daughters. Our family likes camping and fishing together, and my daughters are impatient to get big enough to come hunting with me.

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I am from Saskatoon, Saskatchewan where growing up I spent time on my family farms in Saskatchewan with my three brothers and dogs. These experiences along with time spent canoeing in the Northwest Territories and working as a conservation officer have given me a keen interest in the environment and humans' relationship to it. I studied environmental science at Augustana Campus, University of Alberta. I have recently started a master's degree at the University of Saskatchewan where I am working with Douglas Clark on the TUNDRA project and studying environmental decision-making.

Appendix C: Consent form

Note: This document has been translated into Inuktitut. An Inuktitut version is on file with Douglas Clark.

TUNDRA Project Participant Consent Form

Project Title: TUNDRA

You are invited to participate in a research project entitled TUNDRA. TUNDRA (www.TUNDRA.uit.no) is an international project with universities in Russia, Norway, Canada and the United States (Alaska) working together. Funding for this research comes from the Norwegian Research Council.

Researchers:

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Purpose of the Research: The purpose of TUNDRA is to better understand how environmental decision-making and resource management as well as social and economic conditions affect ecosystems and resources that Arctic communities depend upon locally. Researchers working in different parts of the Arctic around the world will compare their findings.

Procedures: Data will be collected by interviewing community members and mapping their use of the land. Interviews will be face to face. We hope to carry out sixteen interviews in each of the communities of Qamani'tuaq, Igluligaarjuk, Kangiqliniq and Tikiraruaq. Maps will be used as part of our discussion about connection to land and participants will be asked questions related to:

1. how people use the land (and sea)
2. what resources are important to people and how they are being managed
3. peoples' observations about decision-making processes, and how well they're working

With participant consent, answers will recorded in writing and tape recorded. An Inuktitut translator is available for participants who would like to complete interviews in Inuktitut. Interview times will be variable and will take at minimum two hours.

Potential Risks: There are no known or anticipated risks to you by participating in this research.

Potential Benefits: The TUNDRA project offers a forum where Inuit observations and opinions can be documented and voiced at the local and global level. What is heard in Nunavut will be shared and compared with what is heard from communities across the circumpolar north. Therefore, participants have opportunities to be part of a larger effort to learn about what's going on, and how northern peoples from around the world are adapting to changes in different places. We hope that such a shared

understanding of what Arctic communities are experiencing and what they value can help those communities to achieve their own goals in environmental management.

Compensation: Each study participant will receive an honorarium of $100 to acknowledge their time and the knowledge they share.

Confidentiality: Consent forms and identifying information will be accessible only to Douglas Clark and Nils Lokken and will be stored separately from the data so participants will not be able to be identified based on their responses. However, because the participants for this research have been selected from a small group of people, many of whom are known to each other, it may be possible for other participants to identify you by association.

Although the data from this research project will be entered into a database for the TUNDRA project, used in a thesis, published and presented at conferences, your identity will remain confidential. If there is a need to report direct quotations from the interview, you will be given a pseudonym and all identifying information will be removed from our report.

If you wish to have your name acknowledged in relation to data collected, please answer the following questions:

I would like to be identified by name as a participant in any presentation or publication that results from this research.

__ Yes __ No

If my responses are used as direct quotations in the results, I would like to have my responses attributed to me by name.

__ Yes __ No

Storage of Data: Original paper records will be stored in a locked filing cabinet. Interview transcriptions and audio recording will be stored in password protected computer files. Data will be stored for a minimum of 5 years under the care of Douglas Clark and within the TUNDRA project database. Original paper records will be stored in a locked filing cabinet. Data may also be archived within each community or archived by the Nunavut Research Institute.

Right to Withdraw: Your participation is voluntary and you can answer only those questions that you are comfortable with. You may withdraw from the interview for any reason, at any time without explanation or penalty of any sort.

Should you wish to withdraw, at your request, your identifying information and data collected from you will be destroyed and not included in the study. Your right to withdraw data from the study will apply until 2014. After this date, it is possible that some form of research dissemination will have already occurred and it may not be possible to withdraw your data.

Follow up: Prior to any publications or reports being generated, a visit to each community in the fall of 2013 or winter of 2014 will occur where research results will be presented orally and in writing (Inuktitut and English) and discussed with community members and participants at a meeting. During this visit, communities and participants will have the opportunity to validate results and provide their feedback or interpretation. All publications generated from research conducted in the participating communities will be shared with community representative organizations including the Hunters and Trappers Organization, the Kivalliq Inuit Association and the Nunavut Research Institute. Participants will be able to access publications through these organizations.

Questions or Concerns: If you have questions concerning the research project, or would like a copy of the research results, please feel free to ask at any point; you are free to contact the researchers at the numbers provided if you have any other questions.

This research project has been approved on ethical grounds by the University of Saskatchewan Research Ethics Board on April 18, 2013. Any questions regarding your rights as a participant may be addressed to that committee through the Research Ethics Office ethics.office@usask.ca (306) 966-2975. Out of town participants may call toll free (888) 966-2975.

Consent to participate:

With full knowledge of the foregoing, I agree, of my own free will to participate in this study.

__ Yes __ No

I agree to have my interview tape recorded. The recorder will be turned off at any time I request it.

__ Yes __ No

Your signature below indicates that you have read and understand the description provided. I have been fully informed of the objectives of the project being conducted. I understand these objectives and consent to being interviewed for the project. I understand that steps will be undertaken to ensure that this interview will remain confidential unless I consent to being identified. I also understand that, if I wish to withdraw from the study, I may do so without any repercussions. I consent to participate in the research project. A copy of this Consent Form has been given to me for my records.

Written Consent

Name of Participant Signature Date

_____ _____ _____

I read and explained this Consent Form to the participant before receiving the participant's consent, and the participant had knowledge of its contents and appeared to understand it.

Researcher's Signature Date

_____ _____

Oral Consent: I read and explained this Consent Form to the participant before receiving the participant's consent, and the participant had knowledge of its contents and appeared to understand it.

Name of Participant Researcher's Signature Date

_____ _____ _____

A copy of this consent will be left with you, and a copy will be taken by the researcher.

Appendix D: Sample Community Research Agreement

July 24th, 2013

Issatik Hunters and Trappers Organization TUNDRA Project Research Agreement

This Research Agreement has been determined and agreed upon by TUNDRA project representatives Douglas Clark and Nis Lokken of the University of Saskatchewan, and the Issatik Hunters and Trappers Organization (HTO).

Licencing and Ethics Review: A Scientific Research Licence for this project has been issued by the Nunavut Research Institute (licence # 03 009 13N-A), and this project has been approved by the University of Saskatchewan's Research Ethics Board (protocol # 13-29). All research undertaken for this project will follow the conditions specified in those approval documents.

Methods: Approximately 16 interviews with local people identified by the Issatik HTO will occur in Whale Cove. The interview guide designed by the TUNDRA project steering board and modified by Nils Lokken and Douglas Clark for the Nunavut context will be used.

Translation: An Inuktitut translator will be available for those who need or want to conduct interviews in Inuktitut.

Honoraria: Each interviewee will receive an honorarium of $100.

The HTO will: Identify and help contact suitable participants who are knowledgeable about the land and resources to be interviewed. Identify a suitable translator to facilitate accurate and efficient translation for those participants who require translation.

Consent to participate: Before each person participates they will sign a consent form, available in Inuktitut and English. The consent form is a requirement of the University, and informs people of their right to answer only questions they want to and withdraw from the study at any time. Participants also indicate if they consent to have their interview audio recorded and if they would like to be acknowledged in any publications resulting from the project.

Reporting back: Before any of the results from the data collection in Whale Cove are used in publications, summaries of the results will be presented and reported back to the HTO and study participants. This will allow study participants to ensure the accuracy of these preliminary findings. A summary report will be prepared for the HTO and verified based on what is heard at that meeting (Summary report to be translated into Inuktitut). At that time, there will also be a presentation to the HTO and community about the findings of the TUNDRA project in other places too.

What happens with data: Survey responses and map data collected in the study will be put into the TUNDRA project database to be used for journal articles, scientific conference presentations, and public presentations by TUNDRA project researchers (Clark, Lokken, and others in Norway, Russia, and Alaska). Research findings will – we hope – be used to help inform environmental decision-making around the

Arctic, though there is no guarantee of that. Nils Lokken will be using some of the data to write a thesis for his master's degree.

Copies of data: The HTO will be given digital copies of:

1. a summary Excel-format table of interview question results

2. maps, with legends and areas identified by participants

3. audio recordings of participant interviews, where the participant consents for the HTO to have a copy (each participant will be asked).

4. a meta-data report that explains what each data set is, its limitations, and other information relevant to its use and interpretation

Copies of publications: Copies of reports and articles and any publication made from the work we do here will be sent to the HTO, the Nunavut Research Institute and the Kivalliq Inuit Association. Participants will be able to access publications through these organizations. If individual participants would like a copy of any publications for themselves, they will be provided on request at any time.

Issatik HTO Representative

_____
Name

_____
Signature

_____
Date

Representative of TUNDRA Project

_____
Name

_____
Signature

_____
Date